# FINANCIAL AND BUSINESS
# FORECASTING

WARREN F. HICKERNELL

BUREAU OF BUSINESS CONDITIONS
*A Division of*
ALEXANDER HAMILTON INSTITUTE

# Financial and Business Forecasting

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Volume II

BUREAU OF BUSINESS CONDITIONS
*A Division of*
ALEXANDER HAMILTON INSTITUTE

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# PREFACE

The four essentials in business forecasting are: (1) business statistics; (2) a knowledge of economic principles; (3) perspective, based on a study of business history; (4) good judgment in applying principles to the interpretation of statistics.

Mathematical methods can be employed with benefit in a secondary capacity, but since important trends can be obscured by an excessive use of mathematics, the latter should be used sparingly. The principles of money and credit, an acquaintance with banking statistics, a knowledge of federal reserve policy and the ability to interpret agricultural conditions are more important than the use of mathematical methods. Mathematicians themselves are well acquainted with the limitations of mathematics. The above caution is directed to the attention of business men and instructors in economics to indicate that the mere employment of mathematical formulæ does not afford an easy single-track road to a knowledge of business forecasting.

Business men sometimes expect too much from a mathematical chart. They have an undue reverence for mathematics. There is something exact about a mathematical equation. Consequently, if a mathematical formula is employed in constructing a chart used in business forecasting, the layman anticipates that the chart will do the work unaided by human judgment. Some college instructors have a tendency to teach business forecasting as if it were merely a question of using mathematical formulæ in making charts. The construction of such a chart, however, is only a minor phase of business forecasting. In fact, a business forecaster can perform his work successfully without employing the method of least squares, or any other mathematical formula, to eliminate secular trend, and without making any use of the co-efficient of correlation, while a mathematical chart is useless unless supplemented with an analysis of a number of outside factors and good judgment in their interpretation.

Mr. Arne Fisher, actuary of the Western Union Company, has quite successfully forecasted the operating items of that company by a skilful use of the calculus of observations. His methods are sound and the data admit of mathematical treatment. Our caution regarding the use of mathematics in forecasting does not apply in that or similar cases. It is directed against attempts to correlate crop yields with an index of commodity prices, attempts to establish a trend line over a long period where the statistics give evidence of a number of separate zones, each of which requires separate treatment as to secular trend, etc. These efforts in the use of pseudo-mathematics do not go far toward solving the forecasting problems of business men and investors.

In actual business forecasting, it is necessary to deal with the problems of the individual business man or investor. In nearly every case his problem will deal with variations from the general trend. It is necessary to study individual commodities, individual securities and local business conditions, as well as the general trend of business. In this connection it may be pointed out that the use of mathematical methods in making charts of general business was of greater benefit before the World War than it is now under the régime of stabilized conditions which has resulted from federal reserve control. Before the War industrial fluctuations went to extremes and individual markets were importantly affected by the general trend. In recent years, however, economic conditions have been well stabilized and the analysis of individual markets has become increasingly important.

The intensive study of individual movements leads to more confident forecasts than can be arrived at by merely observing the trend of general business guides; and fortunately we can analyze conditions in individual industries and interpret the outlook for individual securities to an extent not possible before the World War. The New York Stock Exchange has persuaded numerous corporations to publish quarterly statements of earnings; trade associations publish more and better data on production and consumption; the Department of Commerce, the Federal Reserve Board and the Geological Survey assemble a wealth of statistical information. We now have current data on employment, payrolls, sales of chain and department stores; building contracts (in square feet); output of automobiles and tires; consumption of wool, silk and crude rubber; output of electricity; production of shoes; brokers' loans, bank debits, gold reserves and circulation, etc., etc.

To the agencies which have done so much to improve our knowledge of trade and financial trends the business world is indebted, and we gladly acknowledge the assistance derived from their work in preparing this volume.

WARREN F. HICKERNELL

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# FINANCIAL AND BUSINESS FORECASTING
VOLUME II

# Financial and Business Forecasting

## VOLUME II

## CHAPTER I

### HUMAN NATURE AND CRISES

In November, 1906, James J. Hill declared that the growth of the United States would be stunted unless the railroads could borrow and spend a billion dollars a year for five years. But during the next twelve months the prices of railroad securities collapsed. Union Pacific dropped from 195 to 100; Northern Pacific, from 232 to 100; Southern Pacific, from 97 to 63; Atchison, from 110 to 66; and New York Central, from 156 to 89. Railroad bonds declined sharply; it was impossible to borrow enough capital to carry out the proposed program of railroad building. Iron production dropped from 25,800,000 tons in 1907 to 15,900,000 in 1908, a decrease of 40 per cent.

In Wall Street the crisis of 1907 was frequently called a "Roosevelt Panic". The Government had prosecuted the Northern Securities Company and the Standard Oil trust, and was thought to be planning other attacks on big business. It was argued that this fact, together with the passage of the Hepburn Railway Rate Act, which became law in July, 1906, had driven foreign capital out of the country and produced a panic among domestic investors. The implication was that the financial crisis of 1907 was essentially psychological.

The psychological explanation of crises has been advanced on numerous occasions. During the crisis of 1857, it was declared that the panic was due to the then newly invented telegraph, which caused rumors of fraud and impending bankruptcy among financial institutions and railway companies to spread instantaneously over the whole country. In trade journals and magazine articles the psychological theory is frequently advanced. One writer says:

> A solution of the problem is found, it seems to me, in the constitution of human nature itself, which bears with impatience the dullness of a monotonous level, and rapidly passes from one extreme to another. Enthusiasm and despondency are equally epidemic.[1]

Another writer states:

> There cannot be any other reason for the whole phenomenon of ups and downs than the "particularity" of the human mind—the waves in human appreciation. Men move together, and many are too apt to act together, to follow in the same ways of mood. . . . All values are moved by demand and offer, and both depend, to a very great extent, on the human will.[2]

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[1] *Engineering Magazine,* vol. 5, p. 114.

[2] *Bankers' Magazine,* London, vol. 53, p. 197.

We do not subscribe to this psychological explanation. It sounds plausible but it usually indicates that the psychological theorist has not become acquainted with trade and financial barometers sufficiently to understand what is going on, or that he refuses to accept the principles of economics which explain trade fluctuations.

If the psychological explanation of prosperity and depression were correct, accurate forecasting of the ups and downs in trade activity would depend upon accurate foretelling of the mental mood of the community, rather than upon intelligent analysis of the factors which determine mental mood. The mental mood of the business world does change from excessive optimism to excessive pessimism, and vice versa, but changes in business sentiment are not the fundamental cause of alternating upswings and downswings in production and prices. It is unreasonable to believe that human nature is so fickle that it simply happened as an accident that the business world was optimistic in 1906 and pessimistic in 1908; or that optimism just accidentally developed in 1919 and pessimism in 1921. The Florida land boom in 1924–1925 was not due to a chance outburst of speculative optimism.

Human nature is a constant factor, from the standpoint of analyzing business conditions. The business public was just as willing to exhibit an optimistic mental mood in 1908 as in 1906; and just as willing to indulge in overspeculation in 1921 as in

1919. The majority of people are born optimists and will engage in abnormal speculation whenever fundamental conditions permit. Depressions cannot be explained by an accidental mental mood of the public. A depression means that there are fundamental conditions which effectually restrain the business public from expressing in speculation the natural optimism which is inherent in human nature. A boom indicates that fundamental conditions are permitting the natural optimism of human nature to find tangible expression in the markets.

In 1836, *Niles' Register* contained an editorial by its famous editor, Hezekiah Niles, in which the following sentence occurred:

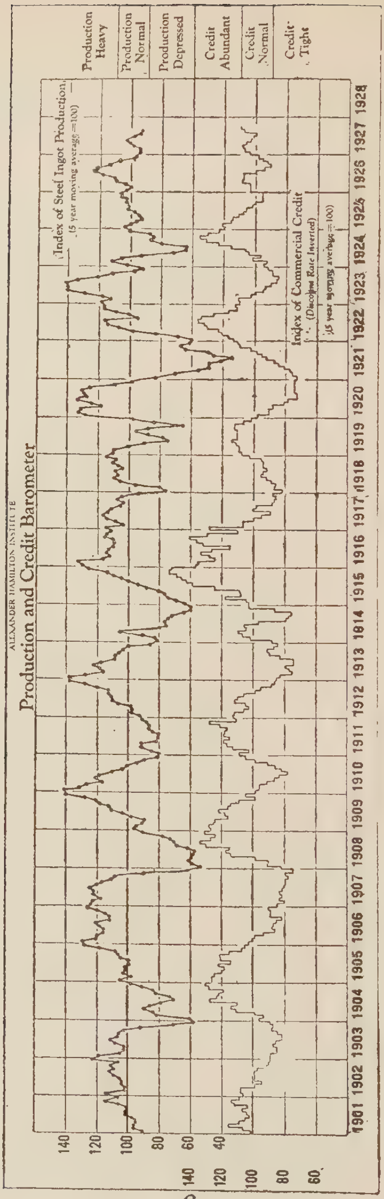
> The ability to buy is always accompanied by a desire to possess (speaking of the country at large).

In 1832 Lord Rothschild, before a committee appointed by the House of Lords to investigate the Bank of England, testified in response to questioning that trade activity depended primarily on the credit policy of the bankers, except in case of war or crop failure. Bank credit determines the trend of trade (subject to the rule of Nature and war lords). However, the credit policy of the bankers is not an uncertain or arbitrary matter, so far as private commercial banks are concerned. The credit policy of the commercial banks can be judged in advance by the average business man. It may be assumed that commercial banks will lend freely whenever they have a surplus supply of loanable funds; they refuse to expand loans only when their supply of loanable funds is badly depleted.

The Bank of England or a federal reserve bank may adopt an arbitrary policy, refusing to lend freely even when it has a large surplus of loanable funds. In general, however, the supply of loanable funds determines the curve of general business activity.

Human nature is optimistic. "Hope springs eternal in the human breast." Perhaps some people are born pessimists. Such men, however, do not usually become business executives. The majority of business executives are born optimists. When there is general pessimism regarding the business outlook, it represents a temporary repression of the optimism which is inherent in the make-up of business executives. Business executives will borrow and expand operations and people will spend and speculate whenever the banks will lend freely. The condition of loanable funds determines whether the business public will display an optimistic mental mood or a pessimistic mental mood, except, as Lord Rothschild stated nearly a century ago, when a crop shortage or a war places the bankers in a subordinate rôle.

The diagram on the next page shows how the mental mood in the steel industry has been adjusted to the trend of loanable funds for over two decades. The two percentage graphs represent monthly figures divided by a centered five-year average.



ALEXANDER HAMILTON INSTITUTE

Production and Credit Barometer

# CHAPTER II

## THE TREND OF BUSINESS

The "trend of business" is determined by "general business conditions". To some, this may seem a distinction without a difference. We believe, however, that there is the difference between cause and effect. When we speak of "general business conditions", we think in terms of crops, politics, the money market, gold production and foreign affairs—the factors which determine the trend of commercial activity. When we inquire about the "trend of business", however, we are interested in knowing whether public spending, or the national income, will increase five billion dollars or decrease three billion dollars during the next twelve months. *The "trend of business" means the trend of total spending, or total income, of the general public.*

The United States is a growing country and the national income increases quite rapidly. It rose from eighteen billion dollars in 1900 to thirty-three billion dollars in 1913, an increase of 83 per cent. Between 1913 and 1920, however, the increase was over 100 per cent; the national income rose from thirty-three billion dollars to seventy-four billion dollars, according to the estimates of the National Bureau of Economic Research. It is possible that the national income will approximate one hundred billion dollars by the year 1930. The following table shows the growth of population and national income from 1910 to 1921, inclusive.

National Income

| Year | National Income (Millions) | Population | Per Capita Income |
|---|---|---|---|
| 1910 | $31,100 | 92,267,080 | $337.06 |
| 1911 | 31,200 | 93,682,189 | 333.06 |
| 1912 | 32,400 | 95,097,298 | 340.70 |
| 1913 | 33,300 | 96,512,407 | 345.03 |
| 1914 | 32,500 | 97,927,516 | 331.87 |
| 1915 | 39,900 | 99,342,625 | 401.64 |
| 1916 | 45,500 | 100,757,735 | 451.57 |
| 1917 | 53,900 | 102,172,845 | 527.54 |
| 1918 | 61,700 | 103,587,955 | 595.64 |
| 1919 | 67,300 | 105,003,065 | 640.94 |
| 1920 | 74,200 | 106,418,175 | 697.24 |
| 1921 | 62,700 | 107,833,284 | 581.46 |

The income per capita has increased quite rapidly during the past generation. A great deal of this increase has been due to inflation of prices. The wage earner receives more, but he pays more for his living expenses, so that the total increase is more apparent than real. There is no doubt, however, that there has been some real increase in the standard of living, due to the broader use of labor-saving machinery and other inventions which have increased the per capita production of wealth.

We do not have annual estimates of national income previous to 1910. The only figures available are those of the Bureau of Census, compiled decennially, beginning with 1850. These figures show a tremendous growth in the total national income; also a substantial increase in per capita income, as follows:

National Income

| Year | National Income (Millions) | Population | Per Capita Income |
|---|---|---|---|
| 1850 | $ 2,214 | 23,261,000 | $ 95 |
| 1860 | 3,636 | 31,503,000 | 116 |
| 1870 | 6,720 | 38,655,000 | 174 |
| 1880 | 7,391 | 50,262,000 | 147 |
| 1890 | 12,085 | 63,056,000 | 192 |
| 1900 | 17,965 | 76,129,000 | 236 |
| 1910 | 31,100 | 92,267,000 | 337 |

## The Business Cycle

The steady growth of the United States is something to keep in mind when making plans for the future. In the work of forecasting the trend of general business, however, we are more particularly interested in the fact that the curve of national income occasionally trends downward. Years of rapid growth are followed by years of reaction and depression. The curve of purchasing power fluctuates. In past decades it has tended to fluctuate in cycles. A business cycle may be defined as *a wave-like oscillation of the per capita money income or purchasing power of a given community over a period of two to five or more years.*

### Periods of the "Normal" Cycle

There is no set rule for dividing the cycle into periods. Different writers use an arbitrary discretion in marking off cycle periods and there is not even unanimous agreement as to the starting point. One writer, John Mills, in discussing the subject two generations ago, began his description of the cycle with the period of dull business which follows the crisis. Most writers, however, assume that *the inception of the cycle is found at the turning point from dullness to revival. This turning point normally follows the "low water" mark in interest rates.* The top of the cycle is featured by maximum prosperity and high interest rates, followed by an industrial crisis.

There are two major periods—one preceding, the other following, the crisis. We might call these two halves of the cycle the pre-crisis and post-crisis periods, featured respectively by inflation and deflation, expansion and contraction. In recent years, however, it has been customary to deal in four shorter periods as follows:

1. Improvement, or revival.
2. Prosperity, or active trade.
3. Liquidation, or selling pressure.
4. Readjustment, or dull trade.

In discussing the stages of the cycle it should be observed that the names of the periods are not in themselves important. They are a means to an end, namely, the analysis of the cycle so as to indicate harbingers of prosperity and signs of crisis. In the following diagram are grouped some of the more important economic tendencies which feature the four periods of the cycle mentioned above.

| | MAJOR PERIODS | MINOR PERIODS |
|---|---|---|
| THE NORMAL CYCLE | I. Pre-crisis half | 1. *Improvement:* Production and employment increase; selling prices rise faster than wages and interest rates; profits large but dividend increases few. |
| | | 2. *Prosperity:* Production maintained; wages and interest rates gain on selling prices; dividend increases numerous but margin of profit narrowing. |
| | II. Post-crisis half | 3. *Liquidation:* Production and employment curtailed; selling prices decline faster than interest and wage rates; profits reduced; dividends decline but not in proportion to profits. |
| | | 4. *Readjustment:* Production remains below normal; interest and wage rates readjusted downward to conform with selling prices; margin of profit gradually restored; dividend reductions numerous. |

### Dissimilarities in Different Cycles

If every cycle were "normal", all cycles would rise and fall in the same proportion; they would be the same in duration. It would be a very simple matter to forecast business conditions.

In the actual flow of economic affairs, however, no cycle is perfectly normal. Cycles are notably dissimilar. First, there is difference in *duration*—some last three years, some six or seven. Next, there is difference in extent of fluctuation, or *intensity* (statisticians call it amplitude). In some cycles, purchasing power increases 5 to 10 per cent, in others 30, 50 or 100 per cent. Then, again, there is difference in *slope.* In the theoretical "normal cycle" we assume a horizontal axis, but in some cycles there is an ascending axis, or upward slope, while not a few exhibit a descending axis, or downward slope.

Finally, there is difference in the *geographical areas* affected in different cycles. The United States, Argentina, Canada, Germany or England may be prominent as a center of speculation in one cycle, but inconspicuous in the next.

Dissimilarities, then, are chiefly of four kinds. They relate to:

1. Duration, or the number of years in a cycle.
2. Intensity, or extent of upswing and downswing.
3. Slope of the axis of the cycle.
4. Areas affected by credit inflation and deflation.

## Length of Cycles

In casual newspaper articles and political speeches panics are frequently said to recur at intervals of ten or twenty years. This may be due to the fact that textbooks on political economy a generation ago usually accepted the notion of a ten-year interval between panics. The ten-year notion was based partly on the writings of Professor Stanley Jevons and partly upon the facts. Crises in England had occurred in 1825, 1836, 1847, 1857 and 1866, and Professor Jevons estimated that on the average during a period of two hundred years, there had been commercial crises every ten and one-half or eleven years.

The data compiled by Professor Jevons related to the period 1700–1870. Professor Jevons, however, was primarily interested in establishing a sun-spot theory and did not arrive at his estimate of the duration of cycles by merely tabulating statistics and accepting the result. The facts just happened to give apparent support to his theory.

Since the results of Jevons' investigations were published in 1878, there has been no regular recurrence of major panics every ten or eleven years. There was a crisis in France in 1882 which was not felt severely in the United States. Similarly, the British-Argentine panic of 1890 was not attended by a collapse in the United States. On the other hand, the panic of 1893 was more pronounced in the United

States than in other countries. In 1900, when there was a severe crisis in Germany and Russia, the United States scarcely paused in its prosperity boom. The crisis of 1903 was a Wall Street panic which depressed the steel industry but did not affect Europe to any great extent and was not severely felt in American wholesale and retail circles. The panic of 1907, however, was felt uniformly throughout the whole world and may be classed along with such other major panics as 1873, 1857, 1837 and 1819.

Thus there is no basis in fact or theory for assigning any definite length to business cycles. Crises occur three, four, five, eight or ten years apart according to conditions.

## Major Versus Minor Cycles

A panic which is felt universally throughout the world is sometimes called a major panic. Those which are not severe or which are localized in one or two countries are called minor panics. The panics of 1819, 1837, 1857, 1873 and 1907 were major panics. In the years 1854, 1884, and 1903, there were minor crises in the United States which were not paralleled in Europe.

In observing the length of business cycles, however, we are not primarily interested in the differentiation between major and minor cycles. Business men frequently lose as much in a minor crisis as in a major crisis. The "duration" tables below relate to the short, or minor, cycles. The cycles classified, moreover, relate particularly to American conditions.

The following table covers the approximate duration of trade oscillations in the United States since 1900.

| Cycle Period | Inflation Period | Deflation Period | Total for Cycle |
|---|---|---|---|
| 1901–1904 | 3 years | 1 year | 4 years |
| 1904–1908 | 3 " | 1 " | 4 " |
| 1908–1911 | 1½ years | 1½ years | 3 " |
| 1911–1914 | 1½ " | 2 " | 3½ years |
| 1915–1922 | 5½ " | 2 " | 7½ " |

In the above table the inflation process was longer than the deflation period in three out of five cases. This was because the slope of each cycle was upward. Gold production was increasing from 1900 to 1914 and then followed the paper money inflation of the World War.

A century ago, after the Napoleonic wars, the deflation period was usually longer than the upswings in prices until the discovery of gold in California in 1847. This is shown in the following table:

| Cycle Period | Inflation Period | Deflation Period | Total for Cycle |
|---|---|---|---|
| 1815–1822 | 4 years | 4 years | 8 years |
| 1823–1833 | 3 " | 8 " | 11 " |
| 1834–1838 | 3 " | 2 " | 5 " |
| 1839–1843 | 1 year | 4 " | 5 " |
| 1844–1848 | 4 years | 1 year | 5 " |
| 1849–1854 | 5 " | 1 " | 6 " |
| 1855–1860 | 3 " | 3 years | 6 " |

The length of the cycles from 1861 to 1900 may be roughly measured as follows:

| Cycle Period | Duration |
|---|---|
| 1861–1867 | 7 years |
| 1868–1878 | 11 " |
| 1879–1885 | 7 " |
| 1886–1894 | 9 " |
| 1895–1897 | 3 " |
| 1898–1900 | 3 " |

Summarizing the period from 1816 to 1922, we find that there are eighteen minor cycles. There are six cycles of four years or less, three of five years, two of six years, three of seven years, one of nine years and two of eleven years.

Summary of a Century

| | | | | |
|---|---|---|---|---|
| 6 | cycles | lasted | 4 | years or less |
| 3 | " | " | 5 | " |
| 2 | " | " | 6 | " |
| 3 | " | " | 7 | " |
| 1 | cycle | " | 8 | " |
| 1 | " | " | 9 | " |
| 2 | cycles | " | 11 | " |

## Intensity of Cyclical Fluctuations

How much do prices usually rise during a period of prosperity?

Prices do not usually increase more than 15 to 25 per cent during a period of peace-time prosperity. In three instances, prices have advanced more than 100 per cent owing to war conditions. There was an advance of over 100 per cent during the Napoleonic wars, an advance of 116 per cent during the Civil

War from 1860 to 1864, and an increase of about 150 per cent during the recent World War period from 1914 to 1920. Preceding the panic of 1837 prices rose 51 per cent owing to the fact that the American people abandoned sound banking habits and indulged in an orgy of paper money inflation. Other cases when prices rose 50 per cent or more were during the two most notable periods of gold inflation—from 1848 to 1857 and from 1897 to 1912. There was an increase of 100 per cent in prices from 1848 to 1857 and over 50 per cent from 1897 to 1912.

These figures, however, should not be taken too literally. We are never exact when we say that prices rise 50 per cent or 100 per cent during a certain war or period of gold inflation. We are merely referring to a specific price index. Different price averages show different results.

From 1913 to 1920 Bradstreet's price index increased 127 per cent; the United States Bureau of Labor's index rose 147 per cent. In the Civil War period Falkner's index increased 117 per cent between 1860 and 1865; an index compiled by Wesley C. Mitchell rose 148 per cent between January, 1861, and the peak in 1865.

## Cycle Slopes

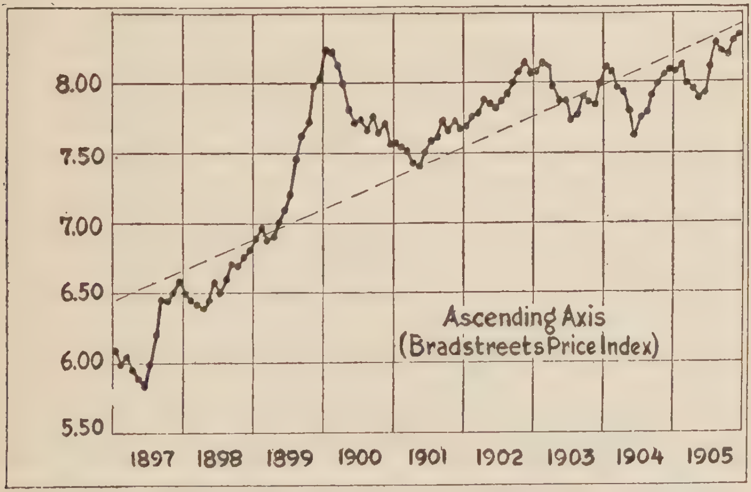
The subject of cycle slopes has immense practical bearing. If a cycle slopes upward, prices advance rapidly and there is little danger of bankruptcies after the crisis. Let us suppose that the price of an article is $50 at the beginning of a cycle. Now, if the cycle has an upward slope, the price will rise, say, from $50 to $75 during the period of prosperity, but after the crisis it will not return again to $50. It will drop, let us say, to only $60. On the other hand, if a cycle has a downward slope, the price will not advance so rapidly. During the period of prosperity, it will advance, let us say, from $50 to only $65. Then, during the trade depression which follows the crisis, it will drop below the starting point. The decline will run, say, from $65 to $40. Obviously, it makes a great deal of difference whether the cycle is going to end with prices at the $60 or $40 level.

There is, of course, the further possibility that the cycle axis may be horizontal. In that case, the price will advance, let us say, from $50 to $70 during prosperity and drop back after the crisis to $50, the original starting point.

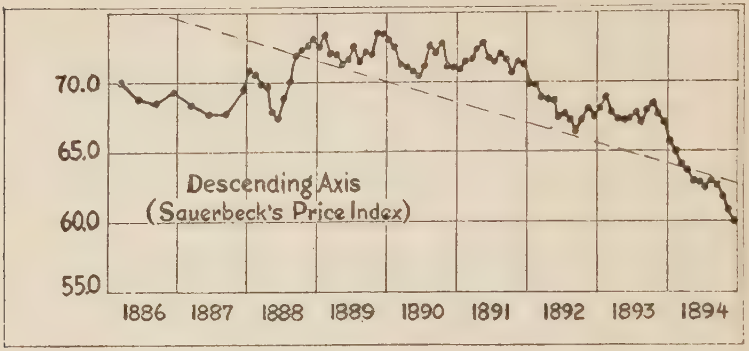
Despite the importance of the subject of cycle slopes, merchants give surprisingly little attention to it. The reason is that they are interested mainly in the prices of the immediate season, whereas the factors determining the slope of the cycle axis operate during a period of years. Capitalists interested in long-term investments and construction projects are naturally more concerned than merchants. A 4 per cent rate on bonds issued when commodity prices are high may involve heavier fixed charges than a 5 per cent rate when prices are low owing to difference in total cost and size of the bond issue.

Gold production, in the long run, is the most important influence in causing cycles to slope upward or downward. In recent years, however, paper money inflation or deflation has held the center of the stage.

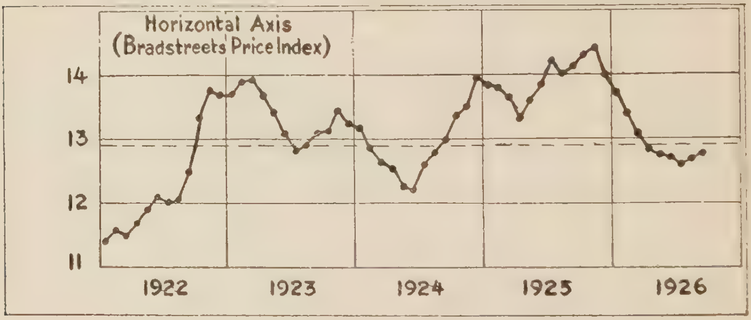
The ascending axis after 1896—caused by increased gold production, due to new mines in Alaska and South Africa and greater efficiency in production, through discovery of the cyanide process—is shown below in Bradstreet's Index of the monthly average of commodities.



The descending axis between 1885 and 1895 is shown in the diagram on the next page.



Since 1921, prices have fluctuated along a horizontal axis, as shown in the following chart.



## Boom Areas and Onlookers

In a discussion of the theory of the business cycle the principles are stated in general terms as if they related to every country on earth. When we study the actual facts, however, we find that in most boom periods, speculation and financial inflation are very pronounced in certain countries, but negligible in others. There are dormant areas as well as boom areas. Some countries are merely "onlookers". Moreover, those countries in which the boom originates may be divided into lending and borrowing countries.

In forecasting the business outlook, it is always important for a merchant, during the inflation period of the cycle, to know whether he is in a borrowing or a lending country. When the crisis arrives, financial embarrassment will be most severe in the country which has been piling up a large floating debt during the inflation period of the cycle. Before the World War, America was a debtor country and usually suffered financial embarrassment when there was credit restriction in London. That was true in 1819, 1837, 1839, 1854, 1857, 1873, 1907 and 1914. There were a number of panics, however, in which America suffered relatively little. There was very little financial embarrassment in the United States during the European banking crises of 1825, 1847, 1866, 1882, 1890 and 1900. The explanation in each case was that America had not been borrowing heavily from Europe during the inflation periods which preceded these foreign panics. The domestic financial situation in America being relatively healthy, the foreign panics were met with composure. The moral is that financial embarrassment is usually the result of mistakes or recklessness in financial matters at home. If a country keeps its own house in order and pays as it goes, it can avoid wholesale bankruptcies during foreign panics. No country can entirely escape the industrial depression which follows a general banking panic in several countries, but if domestic banking and currency policies are sound, there will be a minimum of embarrassment and few bankruptcies on account of panics in foreign countries.

## Lending Countries

In countries which maintain the gold standard, periods of prosperity and depression usually coincide.

Where do cycles usually start? The cycle usually originates in the chief lending country. When it has a large surplus of loanable funds, bankers canvass the world for investment securities and the purchase of these investment securities starts the expansion period of the business cycle. It is possible for a borrowing, or debtor, country to start a cycle of inflation on its own account by the excessive issue of paper money; in that case it will have inflation regardless of conditions abroad. But, ordinarily, cycles in debtor or borrowing countries are germinated when lending countries expand their foreign investments.

During the nineteenth century, Great Britain was the chief lending country. In one cycle the loanable surplus of British banks and investors was invested at home—that was during the boom in "home railways" from 1844 to 1847. In most other cycles of the nineteenth century, however, the expansion periods of business cycles were closely related to the foreign lending policy of Great Britain.

The merchandise exports of Great Britain throw some light on the destination of British capital during the century preceding the World War. Heavy exports of British merchandise to the United States are noted in 1815, 1836, 1853, 1866, 1872 and 1880–82. Exports to Australia are especially noteworthy in 1853 following the Australian gold discoveries and from 1882 to 1892, preceding the Australian panic of 1893. The exports to Argentina show peaks in 1889 and 1906, preceding the Baring panic of 1890 and the world panic of 1907. The heaviest exportation of capital from Great Britain to Canada occurred just before the World War. (See chart, p. 24.)

But Great Britain has not always been the chief money market of the world. Mr. Hobson, in his "Export of Capital", says:

> The center from which financial energy has flowed moved gradually with the Westward and Northward movement of economic power and civilization. It was located early in Northern Italy; it passed for a time to Spain and Portugal, only to move to Holland, to France, and to England, where it had arrived by the end of the 18th century. London was then the only market where any large quantity of floating capital was available to supply the requirements not only of domestic industries, but also of foreign governments and others.[1]

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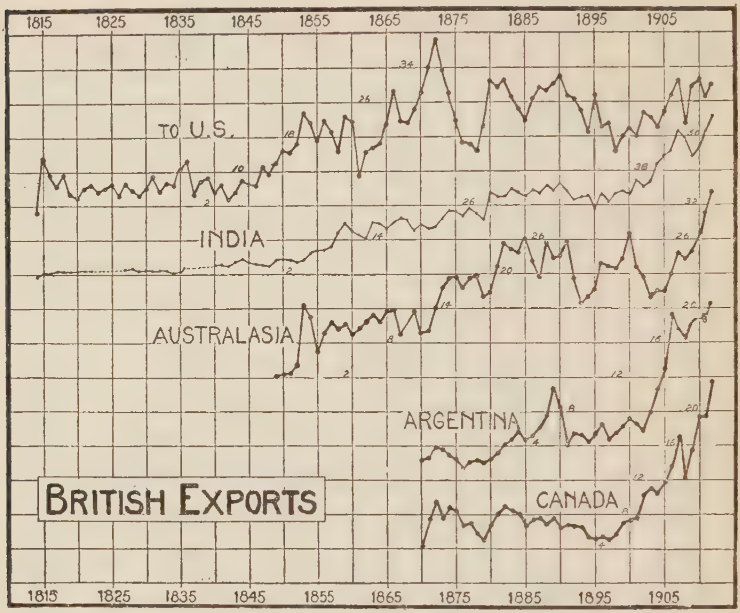
[1] Hobson, *Export of Capital,* p. 80.



In August, 1914, Great Britain began to recall, as far as possible, capital previously loaned to foreign countries. Her liquid assets were mobilized for war. Since 1915, the United States has been the investment center of the world. The student of business cycles has turned to the New York money market instead of the London market for information on the situation at the "center of financial energy".

Will England recover her position as the investment center of the world? Discussions of this subject are usually superficial.

In Great Britain, where the internal resources are largely developed, much of the financing of sales of machinery and railway equipment will be for the account of foreign countries and the dominions of the British Empire. Comparable activities in America will always be more largely for domestic account.

The United States is an empire within herself. If we were to divide the United States into six or seven different sections, or dominions, and tabulate the total loans made in Boston, New York, Chicago, etc., to borrowers in other sections of the country, we should have a total of intersectional loans exceeding the aggregate international investments of Great Britain. Or, if we omitted the intraempire loans made by Great Britain to Canada, Australia, South Africa and India, and took account only of foreign loans to countries outside the British Empire, we would find that London is not much of an international investment center.

The total loans floated in New York for borrowers in other states of the Union and in foreign countries will usually exceed the total loans which London makes to other parts of the British Empire and foreign countries. The total savings and issues of new securities in the United States are at least four times those of Great Britain. Taking the word "foreign" in its usual sense, however, it is possible that as soon as Great Britain recovers her former ability to make loans to the dominions of the British Empire, in many years the foreign investments of Great Britain will exceed the strictly "foreign" loans floated in the United States. But the money market in the United

States will probably maintain its recently acquired position as the chief center of "financial energy" from the standpoint of generating the fluctuations of business cycles; panics and cyclical fluctuations in America will not again be influenced by money market conditions in Europe to the extent witnessed previous to 1914.

## Concept of a "Normal" Cycle

We have discussed cyclical dissimilarities. Is it worth while to discuss the essential characteristics of a theoretically "normal cycle", admitting that no two cycles are alike?

Yes. Science always seeks a "normal" law as a guide in dealing with abnormalities. The physician must base his diagnosis of abnormal health upon the commonly accepted indication of what is normal. Disease is a variation from normal. Similarly, in prognosticating business conditions, the effect of cross-currents, or abnormal factors, can be better judged by having in mind the regular characteristics of a "normal cycle".

The factors essential in a theoretically "normal cycle" are summarized below in what we shall call the "Law of Loanable Funds".

Periods of rising prices and increasing trade activity follow an abundance of banking funds; periods of falling prices and declining activity follow a depletion of banking resources. The ups and downs of community income, or purchasing power, are determined by the lending out and recalling of banking funds to and from the channels of commerce.

Cycles of income, therefore, are largely determined by the supply of "loanable funds".

## The Law of Loanable Funds

The essential elements in the "Law of Loanable Funds" cannot be given in a single sentence. This law of the cycle consists in a complete statement of cause and effect, as between the essential forces, during the entire oscillation of the cycle.

The cycle begins with an abundance of loanable funds as reflected in low interest rates, high bond prices and plentiful bank reserves relative to loans. The course of a normal cycle, with regard to its essential elements and the interaction of cause and effect, may be summarized as follows:

1. The abundance of loanable funds causes interest rates to fall.
2. The fall in interest rates causes a rise in the prices of bonds.
3. The rise in bonds facilitates new financing and stimulates expansion in construction work of a permanent nature; and this involves an increase in the demand for labor and building materials. Wages and prices rise.
4. Rising prices of commodities and enlarged wage payments require increased commercial loans; there is an increase in the circulation of bank notes;

higher interest rates follow the depletion of banking funds.

5. The rise in interest rates restricts the sale of new securities; permanent construction and merchandising are restricted. The prices of commodities fall and pay rolls shrink.
6. The fall in prices and reduced merchandising are attended by reduced loans; wage payments and trade remittances are less, so that the supplies of note currency and gold in circulation become redundant; the amounts in excess of current needs flow back to the banks.
7. The reduction in loans and the return flow of gold and note currency to the banks spell an increase in loanable funds; interest rates fall. We now have the conditions witnessed at the beginning of the cycle, and the old cycle merges into a new one, the "Law of Loanable Funds" again operating as above stated.

## Actual Business Cycles

The factors just discussed relate to the underlying trend of the business cycle. All of them play a part in every business cycle—money rates, new security issues, construction work, production, employment and the trend of commodity prices. If these were the only factors to consider, business forecasting would be a relatively simple matter. In actual business experience, however, we encounter a number of accidental factors which do not appear in every business cycle. The consideration of such accidental influences complicates the work of formulating business forecasts. The mental picture of a normal cycle is desirable, but it must be supplemented by a study of the forces which cause irregularities to develop in every cycle.

The next chapter deals with the cross-currents which cause irregularities in the cycle curve. The chief cross-currents noticed in past cycles have been:

1. Crops.
2. Politics.
3. Federal reserve bank policy.
4. Gold production.

# CHAPTER III

## THE CROSS-CURRENTS

An English statistician, Dr. A. L. Bowley, remarks that even if "we understand the barometer, and have the best forecasts, we may nevertheless get wet if we leave our umbrella at home". He takes a similar attitude toward the possibility of scientific business forecasting. He writes: "By a study of the dominant factors, in the light of past history and by observation with the help of carefully analyzed statistics of recent movements, the direction in which business is moving can be decided and the proper survey of its continuance or change can be weighed; but the unexpected will continue to happen."[1]

What Dr. Bowley refers to as the "unexpected" we choose to call "cross-currents"—the influences which cause dissimilarities in business cycles. These cross-currents are always with us. Business men at the noon-day luncheon or in casual conversation elsewhere are always discussing them. They will ask: What do you think of the political situation in Germany? Will France deflate her currency? Will Great Britain succeed in maintaining the gold standard? Will trade slump on account of the poor grain crops or low cotton prices? Will Congress let the railways earn a living wage? Do you think the federal reserve banks will increase discount rates and work to check inflation? If so, what will happen to the stock market? Will gold be exported in the near future? Is Germany likely to risk war against Poland and France in an attempt to recover the Danzig Corridor and the Silesian mines taken from her after the World War? If so, will Great Britain and the United States become involved?

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[1] Extract from a book review by A. L. Bowley, in the *Economic Journal* of March, 1925, vol. 35, p. 98.

The above questions are illustrations of cross-currents. The majority of business men find more interest in discussing politics and other cross-currents than in analyzing trade thermometers and business barometers. From the standpoint of forecasting business, however, it is better to analyze cycle thermometers and barometers first, and then dispose of these cross-currents one by one. Simply ask what percentage of the country's total business will be affected by a given cross-current and also how it will affect the banking situation.

Cross-currents cease to be vague in their significance if we estimate their effect upon loanable funds. We need only to ask:

1. How will crop conditions affect the supply of loanable funds?
2. To what extent will political uncertainty affect the investment of surplus funds?
3. Will gold production be sufficient to increase bank reserves in proportion to the increasing demands for commercial credit?
4. Will currency stabilization in Europe call for a drain on funds in New York?

5. Will federal reserve bank purchases, or sales, of securities tend to increase or decrease the supply of funds available in the money market?

If we can answer such questions in any given year, we can decide whether there will be material irregularities in the trend of general business. These questions cover most of the "unexpected" things which Dr. Bowley had in mind in the above quotation.

Admittedly, the ability to answer the above five questions, or others in the same category, requires accurate thinking, an understanding of the quantity theory of money and of the habits of the financial markets. But once the habit of thinking in terms of loanable funds is acquired, the analysis of cross-currents is reduced from the vague to the concrete.

The chief problem in the study of cross-currents is to balance one against the other and decide which one deserves the greatest weight.

Take the summer of 1911. The stock market declined rapidly in July and August. To some this decline was explained by the shortage in the corn crop. Others declared it was due to a decrease in business confidence on account of the Attorney General's suits to "bust" the trusts—oil, steel, tobacco, etc. In Wall Street, however, chief weight was given to the political unsettlement in Europe on account of the Moroccan crisis. When Germany and France clashed and England backed up France, there was a quick shifting of funds in Paris, Berlin and Switzerland. In London, investment sentiment was disturbed; British holders of American securities dumped them in large amounts on the New York Stock Exchange. At the time, however, the majority of American business men talked more about trust prosecution and the poor corn crop than they did about the European political crisis. Too much weight was ascribed to the prosecution of the tobacco, oil and steel trusts and not enough to the European crisis.

Contrast this with 1921, when crops and politics could be largely ignored. The success of the Republican party was considered favorable; the crop yields were good; but neither of these factors determined the trend of business in 1921. Practically the entire attention of business men could well have been directed toward the deflation policy of the federal reserve banks. It was the dominating cross-current.

### Cyclical Dissimilarities Caused by Each Cross-Current

It may be helpful to suggest the kinds of dissimilarities in cycles which are caused by the different cross-currents. Let us first take politics. The influence of politics relates chiefly to the *duration* of the cycle. When there is confidence regarding the political outlook, capitalists will engage actively in the promotion of new enterprises and the prosperity period of the cycle will tend to be prolonged. On the other hand, when there is a lack of confidence in the political outlook, capital will become timid and the prosperity period will be cut short. In a period of depression confidence in the political outlook hastens recovery while lack of confidence retards it.

The influence of crops also relates chiefly to *duration.* Abundant crops tend to sustain trade activity and prolong the prosperity period of the cycle; crop failures tend to check industrial expansion and shorten the prosperity period. In a period of manufacturing curtailment large crops hasten recovery while short crops delay it.

The credit policy of the federal reserve banks has a definite bearing upon both the *intensity* of inflation and the *duration* of cycles. The purchase of securities by the federal reserve banks stimulates the inflation movement; by holding and adding to these security purchases, the cycle can be prolonged. On the other hand, a restrictive policy will tend to check inflation and abbreviate the cycle.

Gold production affects the *slope of the cycle axis;* also the *intensity* of inflation. After a great increase in gold production, as in California and Australia in the middle of the nineteenth century and in Alaska and South Africa after 1890, commodity prices will be lifted to a new high level; at the end of the cycle prices will not decline to the starting point. The greater supply of gold permits an expansion of bank deposits and bank notes; the credit expansion increases the money income of the community and forces prices to the higher level.

Reversely, if gold production declines while industrial production increases, the slope of the cycle axis will tend downward. At the end of the cycle prices will be lower than at the beginning.

Paper money inflation has the same effect as an abnormal increase in gold production. When a country suspends gold payment and transacts domestic business with paper money, not only are *paper money* prices inflated in the country issuing the paper money, but the release of gold from that country causes inflation of *gold* prices abroad. The gold tends to flow out to foreign countries and stimulates inflation of bank credit and prices in all countries maintaining the gold standard.

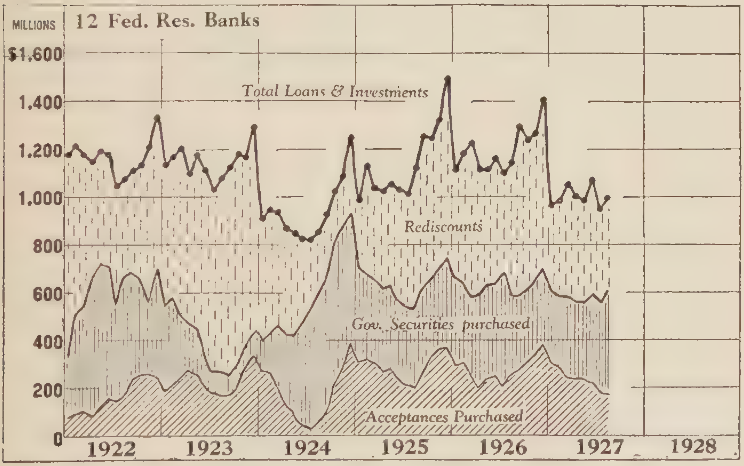
## Credit Control by the Federal Reserve Banks

The need for credit regulation by the federal reserve banks becomes apparent when we consider that there are over 29,000 banks doing business in the United States. Each bank desires a maximum profit. It is impossible for thousands of competing bankers, however "sound" individually, to prevent excessive speculation in commodities and securities if there is no restraint imposed upon the aggregate credit of the country by the governing board of a central reserve institution. During a period of rising prices, merchants require increasing loans. They must carry stocks of goods adequate to meet competition. And their bankers must provide the credit expansion needed, else merchants will change their accounts to competing bankers. Competitive banking always breeds inflation to the limit; it leads to a banking crisis unless credit expansion is controlled by a centralized power.

There are two means of checking inflation: first, by increasing the official rediscount rate; second, by taking up the money market surplus of loanable funds. In preparing to check inflation, the federal reserve banks must accumulate a large amount of government securities. When inflation develops, these securities can be sold to banks or individual investors. This will reduce the available supply of funds in the money market. Private bankers will be forced to seek credit from the federal reserve banks. When this point is reached the federal reserve banks make a high discount rate "effective". A rate of 5 or 6 per cent will check further credit expansion. A high federal reserve rate is not effective when the member banks have plenty of funds to loan. Bankers can ignore the federal reserve discount rate and continue lending as long as they possess a surplus of loanable funds.

Let us repeat, then, that the federal reserve discount rate alone is not sufficient to control the money market. In order to make funds in the open money market scarce so as to check inflation, there must be a plentiful supply of government securities which the federal reserve banks can have on hand and sell when a boom is in danger of being overdone. *It is therefore undesirable that the national debt shall be paid off entirely.* In a country the size of the United

States, several billion dollars of government securities should be permitted to remain outstanding in order to give the federal reserve banks the means of regulating the credit situation. The benefit from having the economic situation stabilized by the operations of the federal reserve banks is greater than any benefit to be derived from retiring the entire national debt. The following chart shows how holdings of government securities were increased in 1924 when the rediscounts declined.



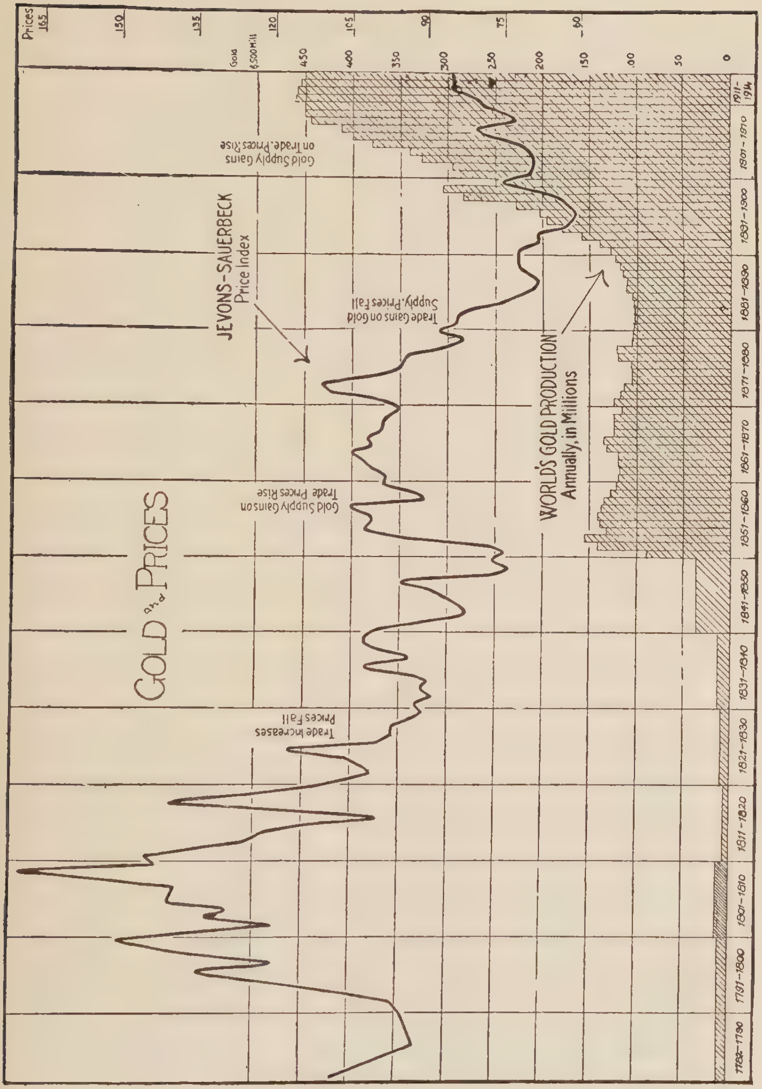
When should the federal reserve banks act to check trade activity? The pre-war rule in Great Britain was to check credit inflation when the gold reserve of the Bank of England declined to a ratio of 40 to 45 per cent against current liabilities. In the United States, however, the gold reserves do not fluctuate as violently as was the case in England before the war. It is more desirable to give primary attention to the condition of factory employment and industrial production. The policy of the federal reserve banks during the course of the business cycle should be as follows:

1. When trade is quiet, the federal reserve banks should lower the discount rate and purchase government securities in order to stimulate recovery in employment and production.
2. When production and employment are at full capacity, the rediscount rate should be increased and the holdings of government securities sold in order to tighten the money market to the extent necessary to prevent abnormal inflation of credit and prices.

## How to Interpret Gold Production

The credit regulation policy of the federal reserve banks is the most important cross-current in relation to the short swings of the business cycle. The subject of gold production, however, deserves serious consideration. The relation of gold production to the long swings of commodity prices over a period of twenty or thirty years is important because these long swings are the most influential factor in determining the slope of the cycle axis.

How shall we study gold production? It is not enough to compare the annual gold production with the level of prices. In the following diagram it is readily seen that the long swings in commodity prices


GOLD and PRICES
JEVONS-SAUERBECK Price Index
WORLD'S GOLD PRODUCTION Annually, in Millions
Gold Supply Gains on Trade. Prices Rise
Trade Gains on Gold Supply. Prices Fall
Gold Supply Gains on Trade Prices Rise
Trade Increases Prices Fall
Prices 165
150
135
120
105
90
75
60
Gold 6,500 Mil
450
400
350
300
250
200
150
100
50
0
1782-1790
1791-1800
1801-1810
1811-1820
1821-1830
1831-1840
1841-1850
1851-1860
1861-1870
1871-1880
1881-1890
1891-1900
1901-1910
1911-1914

do not follow the movement of annual gold production closely.

From 1850 to 1855, the annual production was stationary and prices rose. From 1870–1890, annual production was again stationary but prices showed a persistent downward tendency.

There is a better way of approaching the study of gold and prices. It is to think of all of the gold in the world as being in a great reservoir and then consider by what percentage the annual production increases this total supply. If the total world's supply will be increased only 1 or 2 per cent while the total volume of trade increases 3 or 4 per cent annually, we may conclude that the annual increase in the total world's supply is not keeping pace with the requirements of commerce. This was the case during 1880–1890. Cycle slopes during that period were downward.

On the other hand, if we go back to 1850, the annual increase in the world's gold supply was much greater than the needs of commerce. Prices rose.

There has been a great deal of disagreement regarding the principles involved, because the statistics needed to demonstrate the principles are not very satisfactory. What is the total supply of monetary gold in the world? How much of the gold produced has disappeared from circulation? Close calculations of these factors are difficult. The following table gives the best estimates available of the total world's supply and the rate of increase by decades since 1700.

## World's Gold Production *

(United States Treasury Circular No. 52, July, 1910)

| Period | Stock at Beginning of Period (millions) | Output (millions) | Increase in World Stock Per Cent |
|---|---|---|---|
| 1493–1700 (208 yrs.) | .. | $1,108 | .. |
| 1701–1710 (10 yrs.) | $ 1,108 | 80 | 7.22 |
| 1711–1720 | 1,188 | 90 | 7.61 |
| 1721–1730 | 1,278 | 115 | 9.00 |
| 1731–1740 | 1,393 | 138 | 9.95 |
| 1741–1750 | 1,532 | 160 | 10.44 |
| 1751–1760 | 1,692 | 167 | 9.87 |
| 1761–1770 | 1,837 | 145 | 7.89 |
| 1771–1780 | 1,967 | 130 | 6.61 |
| 1781–1790 | 2,085 | 118 | 5.66 |
| 1791–1800 | 2,203 | 118 | 5.35 |
| 1801–1810 | 2,322 | 118 | 5.08 |
| 1811–1820 | 2,440 | 76 | 3.11 |
| 1821–1830 | 2,516 | 94 | 3.77 |
| 1831–1840 | 2,610 | 135 | 5.17 |
| 1841–1850 | 2,745 | 364 | 13.26 |
| 1851–1860 | 3,109 | 1,333 | 42.87 |
| 1861–1870 | 4,442 | 1,263 | 28.43 |
| 1871–1880 | 5,705 | 1,051 | 18.42 |
| 1881–1890 | 6,756 | 1,060 | 15.69 |
| 1891–1900 | 7,816 | 2,101 | 26.88 |
| 1901–1910 | 9,917 | 3,781 | 38.12 |
| 1911–1920 | 13,698 | 4,250 | 31.09 |
| 1921–1930 (est'd.) | 17,948 | 3,900 | 21.80 |
| 1931–1940 " | 21,848 | 4,500 | 20.60 |
| 1941–1950 " | 26,348 | 5,000 | 19.00 |

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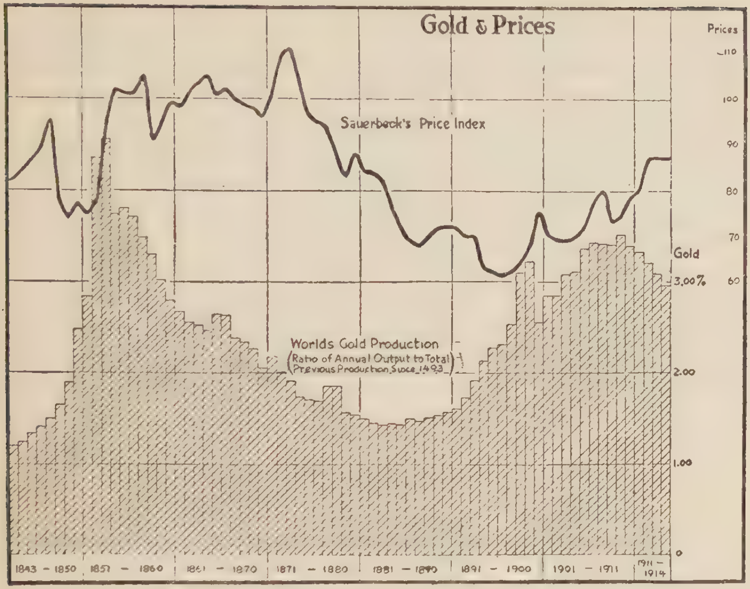
* Estimates of Dr. Adolph Soetbeer, 1493–1885; United States Mint beginning 1886. Dr. Soetbeer's estimates for 1701–1800 are given in twenty-year groups; the ten-year periods from 1701 to 1800 are estimated.

Previous to 1850, the world's stock of gold was seldom increased more than 6 per cent in a ten-year period. In the decade 1851–1860 the actual increase was nearly 43 per cent. The maximum annual production of this decade came in 1853 when an output of over $150,000,000 meant an increase of 4.5 per cent in the world's stock. This was in excess of requirements. An increase of over 4 per cent annually at that time may be deemed to have been excessive because the general level of prices was elevated rapidly. The business cycle sloped upward, the result of gold inflation.

Even when the world's stock increased only 3 per cent per year, prices showed an upward drift. But finally, after 1870, although the annual production of $100,000,000 or more of new gold each year was in itself a large amount, it failed to meet requirements. Trade increased more rapidly than in previous decades. Moreover, the world's stock had doubled in less than 25 years, and the addition of one hundred million yearly meant an increase of less than 2 per cent in the world's stock. Prices had increased conspicuously and to maintain the price level with industry expanding rapidly, an annual increase of, say, $200,000,000 was needed. But this amount was not forthcoming. Prices fell.

The relation of prices to the annual increase in the world's gold stock from 1843 to 1914 is charted in the following diagram:



## Trade Volume

The gold supply, however, is only half the story. Trade does not expand uniformly from decade to decade. When expansion is rapid, more gold is needed annually for banking purposes. And gold production lags most lamentably sometimes when an increase is greatly needed. For instance, after 1870, when there was a great expansion in the area planted to grains in the Middle West, and when the inventions of McCormick and others were enabling one man to produce as much grain as four or five had previously, there was a period of nearly twenty-five years when grain prices were depressed because of excessive production and because gold production was the lowest in half a century. If gold production had increased rapidly there could have been an increase in bank credit sufficient to offset, at least partially, the decline in grain prices.

This method of explaining the general trend of the average level of prices is called the "quantity theory of money". (It is fully explained in Professor Irving Fisher's book on the "Purchasing Power of Money".)

## Inventions

Declines in the prices of individual commodities may not be due at all to a shortage in the supply of gold and bank credit. They may be due to discoveries and inventions.

In the Portland cement industry we have a case in point. From 1890 to 1910, the price declined from $2.10 to $0.89 per barrel. This does not indicate a long period of depression. On the contrary, there was great expansion and prosperity in this industry. Wages and salaries were not reduced. They were increased. And more important still, the number of persons employed in the industry was steadily increased. This shows that in studying the relation of statistical barometers to human welfare, we cannot be guided entirely by the trend of prices. We must go behind the scenes and interpret the cause of the price movement. In the cement industry the increase in employment and production concerns us more than the decline of prices. Not only did employment increase within the cement industry, but the cheapening of the product stimulated construction work and this created greater employment elsewhere.

The proof that there was a larger distribution of wages and salaries in the cement industry on account of the increase in production, notwithstanding the decrease in prices, is shown in the following table.*

| Year | Production (Barrels) | Price per Barrel | Value of the Product |
|---|---|---|---|
| 1890 | 335,500 | $2.10 | $ 704,050 |
| 1895 | 990,324 | 1.60 | 1,586,830 |
| 1900 | 8,482,020 | 1.09 | 9,280,525 |
| 1905 | 35,246,812 | .94 | 33,245,867 |
| 1910 | 76,549,951 | .89 | 68,205,800 |

In studying the business cycle, we are primarily interested in the fluctuations in the aggregate income of the community. It is highly important, therefore, to know that the value of the total production of cement increased from scarcely $1,000,000 in 1890 to $68,000,000 in 1910. Regardless of the decline in prices the people employed in the cement industry had more and more money to spend in each succeeding cycle.

This point must be kept in mind in discussing the broad movement of prices during periods of twenty or thirty years. Sometimes the general drift of prices may be misleading unless we analyze the quantitative features of industry. A decline in prices may not indicate a proportionate decrease in per capita wages or aggregate income.

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*("Cement Industry in the United States", United States Geological Survey.)

## Cost of Mining Gold

The matter of inventions works both ways. Sometimes there are discoveries which stimulate the production of gold, causing prices to rise. For instance, the "cyanide process" made it possible to work low-grade ores, and it was extensively applied after 1890. The improvement in methods of producing gold was a great factor in the rise in prices from 1897 to 1914.

There is another phase of the matter which deserves important consideration, however. The factor we have in mind is the broad swings in the cost of gold production. Scientists and capitalists are most industrious in seeking new methods and new processes when the cost of labor and materials is low. On the other hand, gold mining operations are discouraged when the cost of labor and materials is high. The extremes in gold production, therefore, are in a measure self-corrective. When there is a shortage of gold, the banks find it difficult to maintain adequate gold reserves and credit expansion is held in check. This causes prices and wages to fall. Prices and wages fall to a level so low that gold production is encouraged.

The banks then enjoy increasing reserves and are liberal in expanding credit. Prices and wages rise. This goes on until labor and materials are so high as to discourage gold production; then the rise in prices is halted again as gold production is retarded.

All of this fundamental theory is based on the fact that the price of gold does not change. Gold is bought and sold in terms of gold. The selling price of gold is fixed at approximately $20 per ounce, regardless of the prices of other things. If other prices are very low, as in 1843 and 1897, the cost of producing gold may be as low as $10 per ounce at some mines. The large profits stimulate production. On the other hand, when prices are high, as in 1870 and 1920, the cost of producing gold may be $18 per ounce at the best mines and as high as $25 per ounce in the poor mines. It is known that many mines had to discontinue the production of gold in 1921 owing to the high cost of labor and materials. The following table shows the marked difference in expenses at different mines in South Africa in 1927:

Operating Expense per Dollar of Gold Produced, April, 1927

| Mine | Expense |
|---|---|
| Modderfontein Deep Levels | $ .34 |
| Modderfontein, New | .41 |
| Van Ryn | .53 |
| Geduld Proprietary | .60 |
| Crown Mines | .73 |
| Langlaagte Estate | .80 |
| Simmer and Jack | .89 |
| Wolhuter | .99 |
| Kleinfontein, New | 1.09 |

With improved processes of mining gold, it may not be necessary to return to the low prices of 1897 to stimulate gold production. But some decrease in the cost of labor and materials will probably be needed to cause people to scour the earth's surface for new gold areas in the fashion witnessed a generation ago in the Klondike and in the South African Rand district.

## Scientific Method in Business Forecasting

Is there such a thing as scientific forecasting? That depends upon what is meant by the word "scientific". The word "scientific" is sometimes mistakenly used to indicate that there is no room for qualification or uncertainty. A scientific opinion, according to this sense of the word, would have to be absolute and exact and permit no "ifs". However, that is a mistaken interpretation. The working ideal of scientific method is to search out all the "ifs" in a given problem and make allowance for them, with reference to the established rules or principles of the given science.

Let us take the case of the physician. He finds that he must adopt a different policy in dealing with John Smith, George Brown and Henry Jones. The reason is that when these men are ill their troubles are different. Yet there are certain fundamental rules of science which the physician observes in diagnosing every case. There are certain conditions which are considered "normal", and a physician starts his investigation by observing to what extent the condition of each man differs from the theoretical normal condition. That is the proper procedure in applying science to human problems.

Now, similarly, in the business world there are certain principles established and certain conditions which we consider normal. Our starting point is to decide what is normal and then judge to what extent the existing condition is different from the normal. Having decided this important matter, we are in a position to judge the business outlook. And just as the physician arrives at different conclusions regarding John Smith, George Brown or Henry Jones, we may expect to find that different periods of prosperity will show dissimilarities.

What the physician does is to take the principles of his science and apply them to individual cases. That involves personal judgment, and personal judgment may be very good or very bad. But no one will deny that there is such a thing as scientific method in the diagnosis of human ailments. Similarly with the business forecaster. The statistician who interprets business cycles might be called a business diagnostician who applies scientific principles to the work of business forecasting. His charts correspond to the mechanical instruments of the physician. But in addition to charts, there must be an understanding of the law of the business cycle and the principles necessary to interpret the effect of paper money inflation, crop shortages, gold production and other cross-currents which tend to cause irregularity.

Let us now offer conclusions regarding the meaning of the "method of science". The physician does not guarantee that he will cure a sick man before he has made an examination. In fact, he cannot guarantee a cure after the diagnosis. All that he can claim is that he will honestly apply the scientific knowledge of the medical profession. Similarly, the scientific business forecaster does not guarantee to predict exactly what will happen ten or fifteen months ahead. But he can claim the method of science in applying his knowledge of economics and business statistics to predicting the trend of business. He can guarantee that by his knowledge of economics and statistics he can make more accurate predictions than those who ignore economic principles and the statistical barometers of business activity.

## Science Applied

Business forecasting is not a science just as medical practice is not a science and weather forecasting is not a science. In all three fields, scientific method can be applied; in all three, professional opinion can be based upon scientific laws. But all three represent application of science. In each case the accuracy of opinion depends upon skill gained through experience and the progress made in gathering and observing facts.

It may be argued that accurate business forecasts are impossible because business cycles are dissimilar.

No two are alike. Every cycle presents irregularities. But let us compare with weather forecasting. The irregularities in business cycles are a good deal like the irregularities in weather conditions from year to year. The law of the seasons affords a scientific basis for forecasting weather conditions. We know it will be warmer in July than in February and colder in December than in June. But in New York City the average temperature in January, 1921, was 33.6 degrees Fahrenheit as compared with 24.1 in January, 1920. That is a rather wide divergence.

Shall we say that weather forecasting is without scientific basis because the average temperatures in these years were so far apart? No, we should accept whatever rules astronomers and meteorologists can give us as our guide, and then make allowance for the differences from year to year arising from local conditions. Whatever scientific groundwork is established is worth while.

In the field of scientific endeavor the understanding of principles is only half the battle. Their useful application in practical affairs is another matter. In the work of the Weather Bureau, the law of the seasons is a general guide, but the cross-currents in the temporary situation figure importantly in actual weather forecasting. Similarly, in business forecasting we must seek a general guide and then study the cross-currents. The Law of Loanable Funds is the general guide; the important cross-currents are crops, politics, federal reserve policy, gold production, international finance and foreign monetary conditions.

## Dealing with the Cross-Currents

The method of business forecasting followed by bankers and captains of industry may be likened to the method of aiming a coast defense gun to hit a battleship. First, the gunner gets the range and azimuth. Next, he adjusts mechanical appliances to allow for the height of the tide and the velocity of the wind. There are also appliances which make allowance for the direction of the wind and for other cross-currents which may deflect the course of the projectile. This is the method of science. The gunner employs Newton's Law of Motion. Newton's law states that if you set a body in motion, it will move in a straight line forever, at uniform velocity, "unless acted on by some external force." But no projectile can move an instant without encountering external forces such as gravity and wind. Nevertheless, it is scientific procedure to assume Newton's law and then allow for the "ifs". If the gunner misses the mark it is because the "ifs" have not been fully allowed for.

In business forecasting we get the range and azimuth—the immediate trend and position of business—by referring to a cycle chart. Then we make allowance for the "ifs". We make allowance for unsettled conditions abroad, giving the proper weight by referring to statistics of trade and finance. We refer to statistics to give proper weight to crops, gold production, paper money inflation or deflation in Europe. The effect of politics upon investment sentiment and business confidence may have to be mentally weighed. But most of the cross-currents in the business outlook can be studied by referring to statistics.

# CHAPTER IV

## YARDSTICKS OF TRADE ACTIVITY

The president of a large merchandising corporation, in speaking of what he calls "new fangled" systems of business forecasting, recounts that when he began business in 1870, every man had to develop his own system. He says:

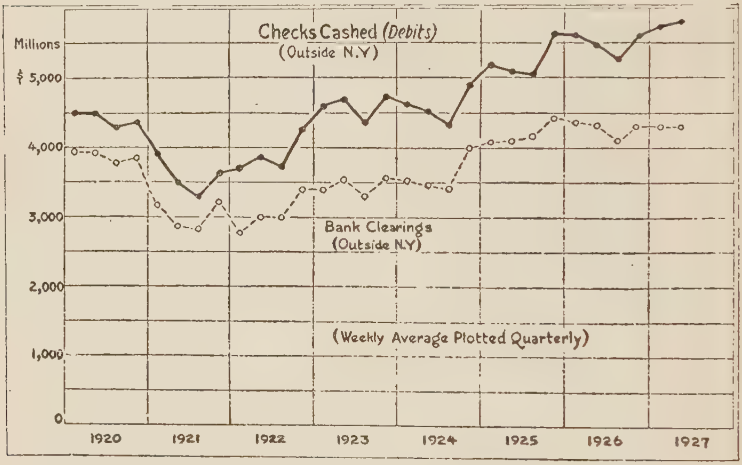
> Two generations ago I watched pig iron and bond prices. If the iron industry showed improvement and bond prices continued steady, I knew that trade was active and Europe was buying railroad and government bonds, or at least not dumping American securities back into the New York market. I was optimistic. But if the bond market declined sharply and iron prices began to drop, I immediately took in the sail. The decline in iron prices indicated that the railroads were about to curtail new construction, and the decline in bond prices explained the reason why.

The age of booms in railroad building has passed; European capital is no longer an important factor in American business. In one respect, however, this man's system of forecasting was admirable—he divided his statistics into two separate groups. Pig iron was his yardstick of trade activity, his trade thermometer. The prices of railroad and government bonds, reflecting the supply of investment funds in New York and London, threw light upon the future trend of trade activity—bond prices were his barometer.

Barometers foreshadow the trend of thermometers. The discussion of barometers we shall take up in the next chapter. Under the head of "yardsticks", we are interested only in statistics which measure the trend of business activity—figures which indicate whether trade is above normal or below average without indicating the future trend. These yardsticks, like the mariner's compass, tell us what the situation is, but without suggesting whether a storm or fair weather lies ahead.

## Bank Check Transactions

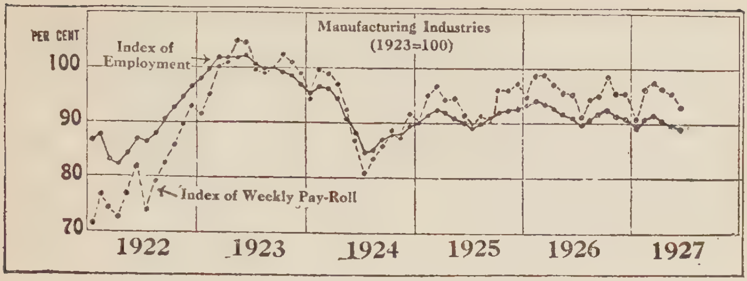
Statistics of bank clearings are useful to some extent. The New York Clearing House began compiling statistics of bank clearings in 1853. These clearings for New York City, however, are dominated by speculative transactions in Wall Street. They do not give us a good index of actual merchandise transactions. It is better to use the bank clearings outside of New York. Even in the clearings of these outside cities are included many speculative transactions in wheat, cotton and securities. Then, too, a great many checks which are drawn and issued to pay for merchandise do not go through the clearing house. Bank clearings constitute only 70 to 80 per cent of the total of check transactions. Since the War the banks have compiled and published reports on checks drawn and cashed. They total 25 to 30 per cent more than clearings as the following diagram shows:



## Employment

During the last ten years, the Federal Reserve Board and the United States Department of Commerce have compiled a number of statistical charts of trade activity. Among them is an index of employment and pay rolls in manufacturing plants. The employment index shows the high activity of 1923, the brief depression of 1924 and the recovery in 1925. (See chart on page 57.)

An especially valuable feature of the reports on employment which the Government compiles is that comparisons are given for identical factories in individual industries. Sometimes the automobile industry is more active than the steel industry. The woolen industry may be dull while the silk industry



is active. These differences are brought out in the reports on employment. The following table shows the general increase in employment in the summer of 1925 as compared with the curtailed operations in the summer of 1924.

Weekly Factory Pay Rolls

| | July, 1925 | July, 1924 | Per Cent Change |
|---|---|---|---|
| Automobiles | $ 9,664,000 | $ 6,524,000 | +48.1 |
| Iron and Steel | 7,219,000 | 5,798,000 | +24.5 |
| Found. & Mach. Shop | 4,966,000 | 4,398,000 | +12.9 |
| Car Bldg. and Repair | 4,065,000 | 4,174,000 | — 2.6 |
| Cotton Goods | 2,597,000 | 2,238,000 | +16.1 |
| Lumber | 1,980,000 | 1,941,000 | + 2.0 |
| Electrical Prod. | 1,882,000 | 1,725,000 | + 9.1 |
| Boots and Shoes | 1,874,000 | 1,706,000 | + 9.8 |
| Slaughtering | 1,844,000 | 2,022,000 | — 8.8 |
| Tires | 1,764,000 | 1,250,000 | +41.1 |
| Pet. Refining | 1,551,000 | 1,514,000 | + 2.4 |
| Woolen Goods | 1,327,000 | 1,250,000 | + 6.2 |
| Paper and Pulp | 1,252,000 | 1,179,000 | + 6.2 |
| Silk Goods | 1,180,000 | 887,000 | +33.0 |
| 38 Other Industries | 22,476,000 | 20,741,000 | + 8.4 |
| Total | $65,641,000 | $57,347,000 | +14.5 |

The reports of pay rolls are more interesting than the figures for the number employed. If there is overtime, or only part-time work, the pay rolls will reflect the situation. The number employed, however, does not tell us whether employment is normal, full-time or part-time.

## Merchandise Imports

The foregoing statistics of check transactions and pay rolls are a direct reflection of the trend of the purchasing power of the country. The total checks reflect not only changes in the quantity of goods distributed but also changes in prices. Pay rolls reflect changes in the number employed and also changes in wages. Similarly, the value of merchandise imports reflects not only changes in quantity but changes in prices as well. All three are *value* indexes.

Imports, of course, do not reflect the total volume of the country's trade. In 1920, when the national income of the United States was estimated at seventy-four billion dollars, imports were only four billion dollars, or about 7 per cent. There may be times when imports do not indicate fluctuations in prosperity as well as bank clearings and pay rolls because they amount to less than 10 per cent of the country's total purchasing power. However, they usually increase when manufacturing is active and decrease when a period of trade reaction is in progress and are a good secondary index.

Merchandise exports are not so good as imports as a trade indicator. A shortage in cotton or wheat production or a change in the grain situation abroad may affect exports materially. Both imports and exports, however, deserve observation as trade indicators. They are always interesting in a general way and, even when their movements are in need of explanation, the special interpretation required will help to improve one's opinion of the business outlook.

## Freight Car Loadings

Freight car loadings are better than merchandise imports in one respect—they reflect the volume of trade over the whole country instead of a small fraction of it. In another respect, however, they are less interesting than merchandise imports or bank clearings; they do not reflect changes in the price level. They are only a *quantitative* measure of trade activity. They are such a general index of trade, however, that they rank well up with the best of business thermometers. The following table shows that car loadings reach a peak in October and fall to a low level in December. From August to November there are heavy shipments of coal, cotton and wheat, and also a large movement of merchandise to the crop sections for the fall trade and Christmas demand. The traffic movement subsides by the time retail trade reaches its peak in December.

Freight Car Loadings (Weekly Average)

| Months | 1924 | 1925 | 1926 |
|---|---|---|---|
| Jan. | 908,100 | 921,300 | 922,700 |
| Feb. | 915,700 | 904,800 | 919,100 |
| Mar. | 874,800 | 923,700 | 969,300 |
| April | 894,900 | 940,700 | 958,300 |
| May | 858,400 | 968,300 | 1,036,800 |
| June | 906,400 | 989,000 | 1,028,000 |
| July | 894,400 | 986,200 | 1,049,100 |
| Aug. | 974,400 | 1,080,200 | 1,104,400 |
| Sept. | 1,036,600 | 1,074,400 | 1,147,600 |
| Oct. | 1,090,700 | 1,107,500 | 1,205,100 |
| Nov. | 974,700 | 1,023,700 | 1,067,900 |
| Dec. | 847,500 | 888,000 | 904,100 |
| 12 Months | 931,400 | 984,000 | 1,026,000 |

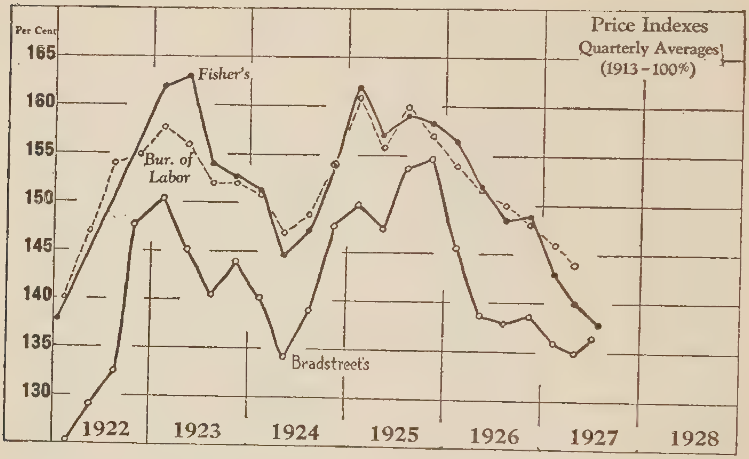
In 1926, for the first time, loadings averaged over a million cars per week. Moreover, the average size of a freight car in 1926 was larger than in 1916 or 1910. The increase in actual tonnage capacity, therefore, was greater than indicated by the increase in the number of cars.

## Price Indexes

Most indexes of prices do not measure the trend of the volume of trade. They are defective as an index of general business conditions for that reason. However, prices generally increase during a period of prosperity and decrease during a period of trade reaction, so that a price index is an interesting factor to study in connection with quantitative statistics of production and distribution.

If an index of prices is heavily weighted with agricultural commodities, it is possible that it may increase more rapidly than the trend of general business in case there is an abnormal advance in wheat, corn and cotton, and it is also possible for such an index to lag behind the trend of general business if there is a depression in the prices of cotton and grain. Such considerations must be borne in mind when observing an index of prices as a guide to the trend of business activity. In Professor Irving Fisher's index of 200 commodities, food products are given a weight of 45 per cent of the total. In making up the price index compiled at Washington by the United States Department of Commerce, food and grain products also constitute a large proportion of the total. These two price indexes are compared with Bradstreet's price average in the accompanying diagram. (See page 62.)

During the World War, an index of prices was a better reflection of the trend of economic affairs than a chart of freight car loadings. During the period from 1915 to 1921, changes in the price level were more important than changes in the volume of goods produced and consumed. In the ordinary business cycle, however, the physical measurements of production and distribution are of equal interest and importance. In fact, in many years carloadings and production data more accurately reflect the trend.

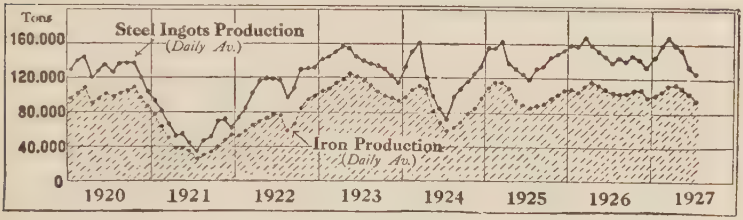


## Iron and Steel

Production statistics of iron and steel are interesting as indexes of the trend of general business in the United States. That would not be true of Spain, Brazil, Argentina and Japan. Those countries do not produce enough steel to make production statistics a good index of trade activity. In the United States, Great Britain, Germany, Belgium and France, however, statistics of iron and steel production are always of interest.

During a strike in the steel industry, trade in other lines may continue active; in that case the figures of steel production are not a good general barometer. In actual experience, however, we find that the monthly reports of iron and steel production are well worth watching as reflecting the general trend of trade activity.

The accompanying diagram shows the trend of the production of pig iron and steel ingots since 1921.

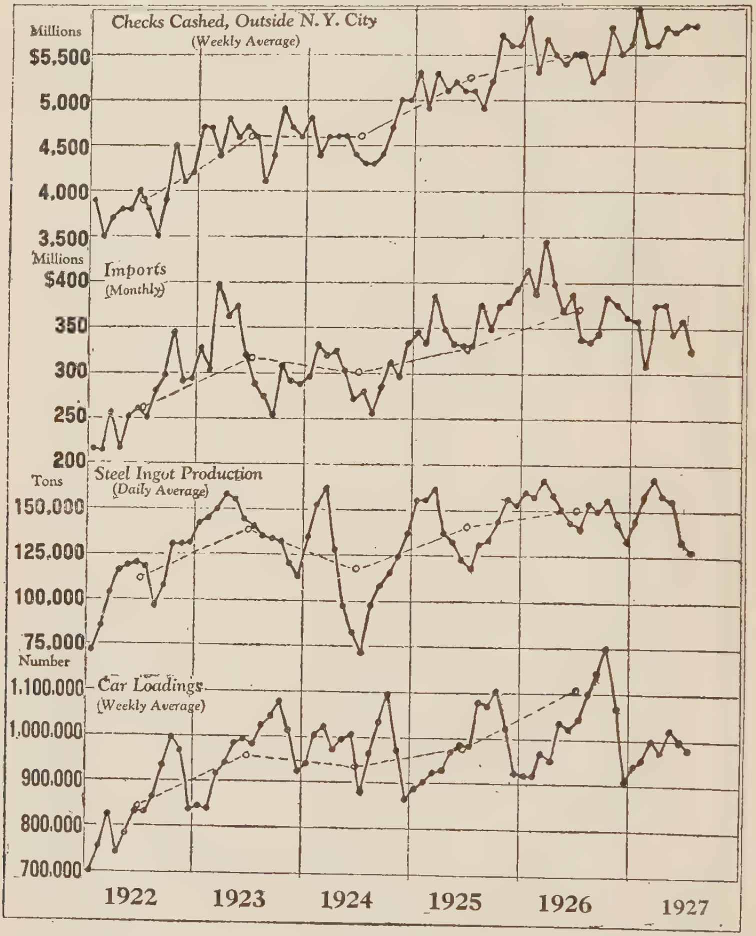


## Miscellaneous Indexes

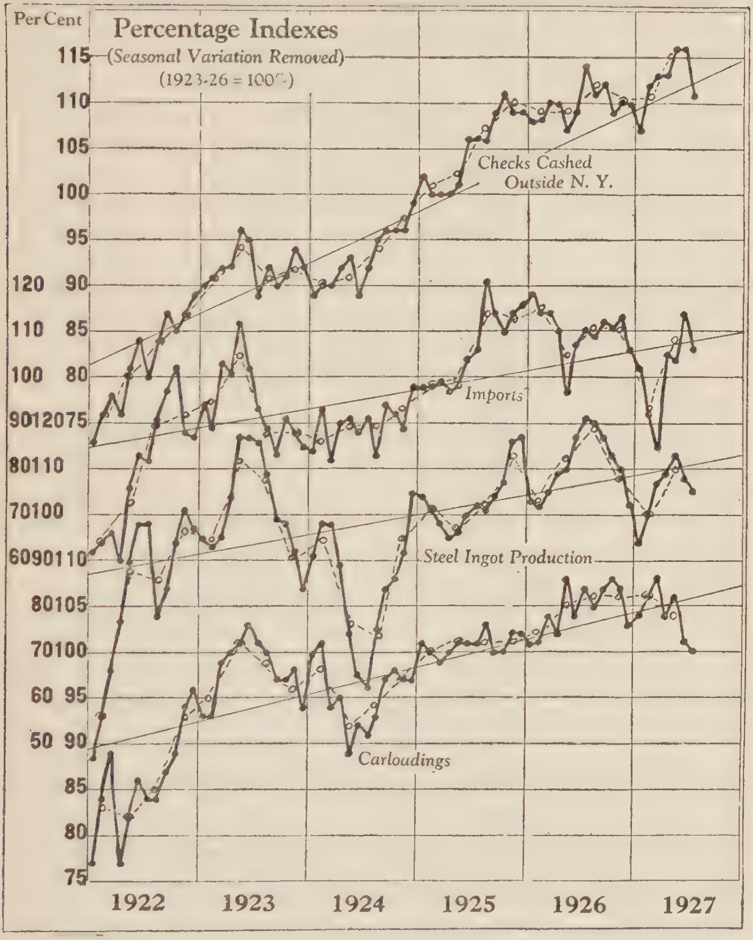
It is desirable to supplement the study of the trend of general business with a discriminating observation of charts of production and consumption in different industries. Monthly data are reported on the consumption of cotton, silk and wool; the production of rubber tires, automobiles, boots and shoes, cement, coffee, lumber, bricks, petroleum, etc; and foreign trade in basic raw materials. A detailed knowledge of these subjects assists in forming conclusions regarding the general outlook.

## Eliminating Seasonal Variation

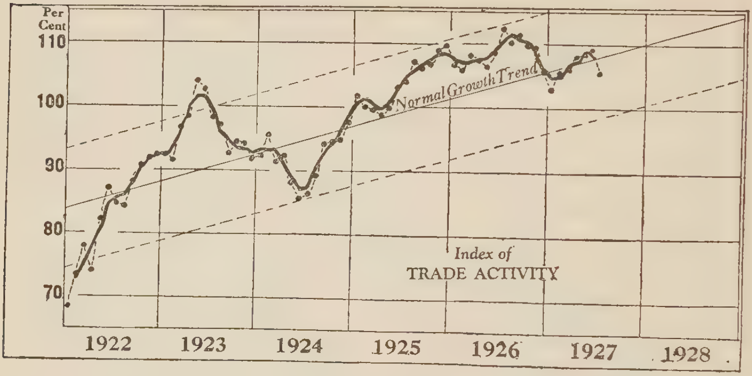
The interpretation of trade statistics is made more easy if the monthly reports are reduced to a percentage index, comparing January with previous Januaries and February with previous Februaries, and so forth. It is a reasonable expectation that February



trade reports will show a decrease from January. Such a comparison, however, means nothing. The important question is whether February is doing as



well as January relative to previous Februaries and Januaries respectively. By reducing each month to a percentage index relative to the same month in pre-



vious years, a true comparison between February and January can be arrived at.

To illustrate this, let us study, first, the actual statistics of car loadings, steel ingot production, checks cashed and merchandise imports, and then, the same factors reduced to a percentage index. The three diagrams (pages 64, 65 and 66) show, first, the actual figures, then, the percentage indexes in which the seasonal variation has been eliminated, and a composite "Index of Trade Activity" made by averaging the four percentage indexes.

The method of calculating the percentage indexes in these three diagrams is a simple one. Let us illustrate by showing the four-year average of steel ingot production for 1923–1926 as our "base period", and then divide this into the actual figures for 1926. The percentage index for each month which results is shown in the following table:

Monthly Steel Ingot Production

| Month | 1926 (tons) | Four-Year Average * (1923–26) (tons) | Ratio, 1926 to Four-Year Average |
|---|---|---|---|
| Jan. ....... | 4,150,000 | 4,027,000 | 1.02 |
| Feb. ....... | 3,802,000 | 3,721,000 | 1.02 |
| Mar. ....... | 4,488,000 | 4,281,000 | 1.03 |
| April ...... | 4,124,000 | 3,783,000 | 1.05 |
| May ....... | 3,945,000 | 3,579,000 | 1.09 |
| June ....... | 3,751,000 | 3,199,000 | 1.10 |
| July ....... | 3,651,000 | 3,025,000 | 1.10 |
| Aug. ....... | 4,005,000 | 3,394,000 | 1.13 |
| Sept. ....... | 3,931,000 | 3,358,000 | 1.17 |
| Oct. ....... | 4,093,000 | 3,617,000 | 1.17 |
| Nov. ....... | 3,722,000 | 3,405,000 | 1.20 |
| Dec. ....... | 3,472,000 | 3,391,000 | 1.21 |

*The averages are corrected for secular trend from January to December.

## Eliminating Normal Growth

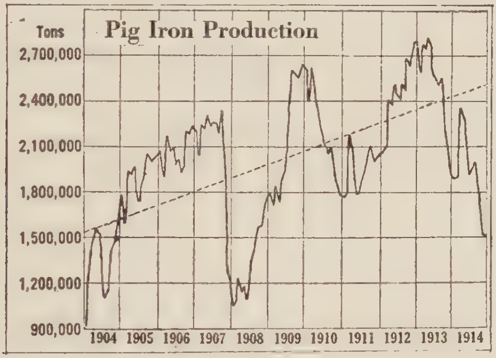
Some people prefer a chart which shows the upward trend due to the normal growth of the country. The diagrams just discussed show this normal growth. Those with a mathematical turn of mind, however, find interpretation still more easy if all of the years are reduced to a common denominator. The fact that the figures for 1926 are larger than in 1923 does not necessarily mean that trade was relatively more active. The manufacturing capacity of the country increases from year to year. The carrying capacity of railroads increases from year to year. The imports of raw materials should increase from year to year as a normal tendency. To reduce all years to a common denominator, it is necessary to ascertain the rate of normal growth over a period of years, and then deduct the proper amount from the figures of 1926 to bring that year into line with 1922 or 1923.

In making such a calculation, however, it is desirable to study more than four or five years. The rate of normal growth can be better estimated if we take a period of ten or fifteen years. We shall take the period 1904–1914 because the later period between 1915 and 1925 covers the abnormal conditions of the World War. For statistical purposes, the prewar period is more satisfactory for illustrating the method of eliminating normal growth.

There are a number of methods which may be used to reduce the "actual" figures to a comparative basis —to step down 1926, for instance, so that the adjusted figure will permit a direct comparison with 1922 or 1923. The more refined the method the better, but one method is about as good as another for practical purposes. Mathematicians usually employ what is called the "least squares" method. We may also apply the formulæ for calculating compound interest and simple interest. It is also possible to employ the method of "moving averages", in which the current figure is divided by an average for the five or ten years preceding. Or, the moving average may be centered, as in the chart on page 6.

We are not going into detail regarding these formulæ. Their discussion properly belongs in a textbook on mathematical methods. We shall dispose of the subject briefly by showing what happens if we eliminate the normal growth (secular trend) from pig iron production by three different methods.

The following diagram shows "actual" pig iron production, monthly, from 1904 to 1914. The upward trend of production during this period is strongly pronounced.

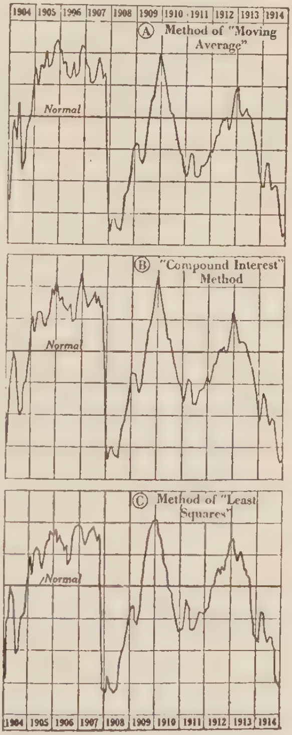


The need for eliminating normal growth is apparent. It is difficult to tell off-hand whether the iron trade in 1913 was more active than in 1906, relative to a normal expectation. Production in 1911 was much larger than in 1904, and yet 1911 was not considered a good year in the iron industry.

The three curves in the cut on page 71 show what happens if all years are reduced to a common denominator with reference to a normal line. A different method has been employed in constructing each of these three graphs. As a result, they show slight differences. In general, however, all of the methods are satisfactory from the standpoint of business forecasting. The mathematical method selected is of secondary consideration. The important things in business forecasting are to understand economic principles thoroughly, to have an accurate knowledge of all the important facts in the situation and a certain amount of experience in interpreting the factors which influence the trend of production and prices. One who thoroughly understands economic principles and is master of applying them to the facts in the business situation will formulate more accurate forecasts with the help of a poorly constructed chart than will a mathematician with a more perfect chart who is not a master of economic principles and not skilled in the interpretation of the cross-currents in the business situation. The ideal objective, of course, is to understand principles, to know facts and to employ perfect statistical methods. But an understanding of principles and a knowledge of how to apply them to the facts of trade history is of first importance in making successful forecasts. This is not said to disparage the use of refined statistical methods in constructing charts of business cycles. It is merely intended as a caution to business men and lay students of business forecasting, because there is a natural tendency to place too much faith in mathematical formulæ. A so-called scientific forecasting chart will not solve the problems of buying and selling. The business man himself must devote considerable mental effort to an understanding of principles and the interpretation of essential trade and financial statistics.

## Systems of Forecasting

Occasionally one reads of different "systems" of forecasting. One organization constructs a chart showing the oscillations of the business cycle—its system is said to be based upon this chart. Other organizations publish forecasting charts—their different charts are said to constitute different systems of forecasting.



This attempt to differentiate between different systems is far-fetched. There can be no such thing as a difference in the system of forecasting. All forecasting organizations must study the same statistics of bank clearings, iron production, foreign trade, car loadings, price indexes, etc. All organizations must study the same statistics of banking conditions — member banks, federal reserve banks, Canadian banks, European banks, etc. All organizations must analyze production and consumption statistics for the different industries; they must study conditions in different sections of the United States. They must all apply the same economic principles and develop perspective through a study of the same historical facts.

The study of all these data is necessary in business forecasting, and it is absurd to state that there are different systems merely because one organization happens to apply the method of "least squares" in calculating normal growth, while another employs a "moving average" to eliminate secular trend. There is no monopoly on mathematical formulæ. All organizations can make use of all the various methods, or formulæ, for treating statistics. The use of a mathematical formula to "smooth" a curve is merely a minor incident in one department of the total work of a forecasting organization. Simple percentages showing increases and decreases, or the ratio of one factor to another, have a wider use than mathematical formulæ employed to eliminate seasonal variation and secular trend.

To summarize, any system of forecasting must devote attention to the following:

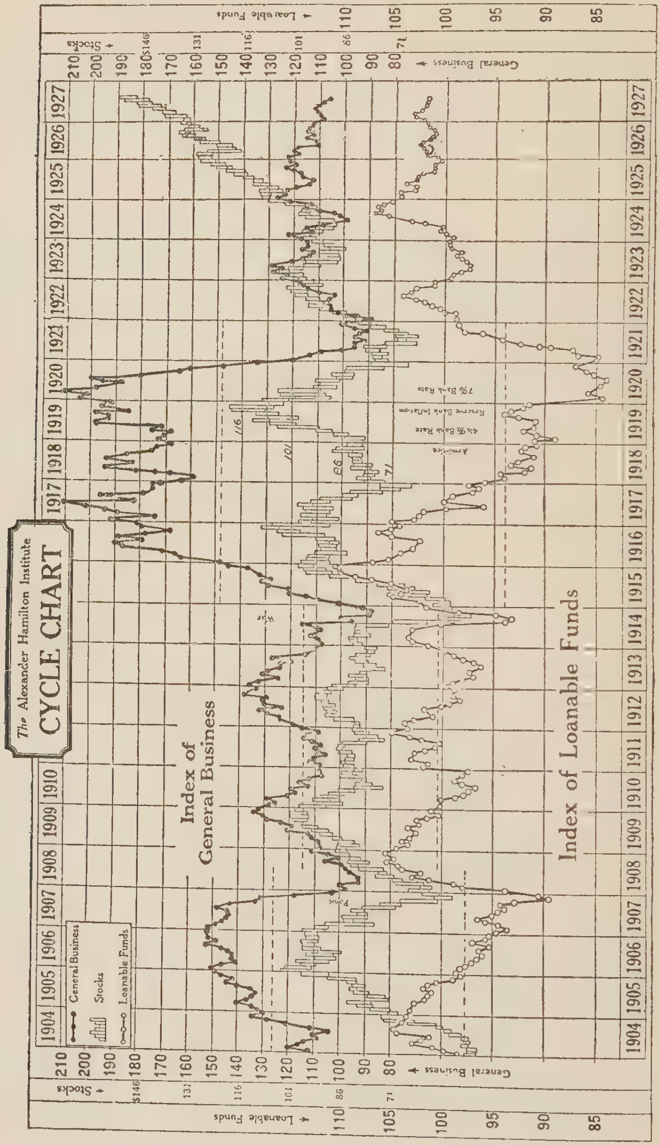
1. The application of economic principles
2. The development of perspective through a study of historical facts
3. The analysis of individual industries
4. The study of sectional sales and credit conditions
5. The study of the general trend of commodity prices

6. The study of the general trend of investment securities
7. The analysis of different groups of speculative stocks
8. The construction of barometers, or indexes, of the business cycle

It is obvious that the use of mathematical formulæ in smoothing statistical curves of the business cycle does not constitute a system of forecasting. The chief difference in forecasting services is not in any system employed but in personnel—the judgment and interpretative accuracy of the statisticians in preparing forecasts. Statistical data and mathematical formulæ are the common property of all organizations.

## A Composite Index of Business Activity

In the foregoing discussion of bank clearings, imports, iron production and other trade indicators, we have indicated their limitations as yardsticks of general business activity. If we average a number of these individual factors together, the composite index of business activity will not be a perfect reflection of the ups and downs of purchasing power. As a mechanical basis for discussing the business outlook, however, such an index has value. The Index of General Business in the accompanying Cycle Chart is a composite of such items as bank clearings, imports, iron production, commodity prices and exports.


The Alexander Hamilton Institute
CYCLE CHART
Index of General Business
Index of Loanable Funds
General Business
Stocks
Loanable Funds
1904
1905
1906
1907
1908
1909
1910
1911
1912
1913
1914
1915
1916
1917
1918
1919
1920
1921
1922
1923
1924
1925
1926
1927
210
200
190
180
170
160
150
140
130
120
110
100
90
80
$146
131
116
101
86
71
110
105
100
95
90
85
Panic
War
Armistice
4½% Bank Rate
Reserve Bank Inflation
7% Bank Rate
116
101
86
71

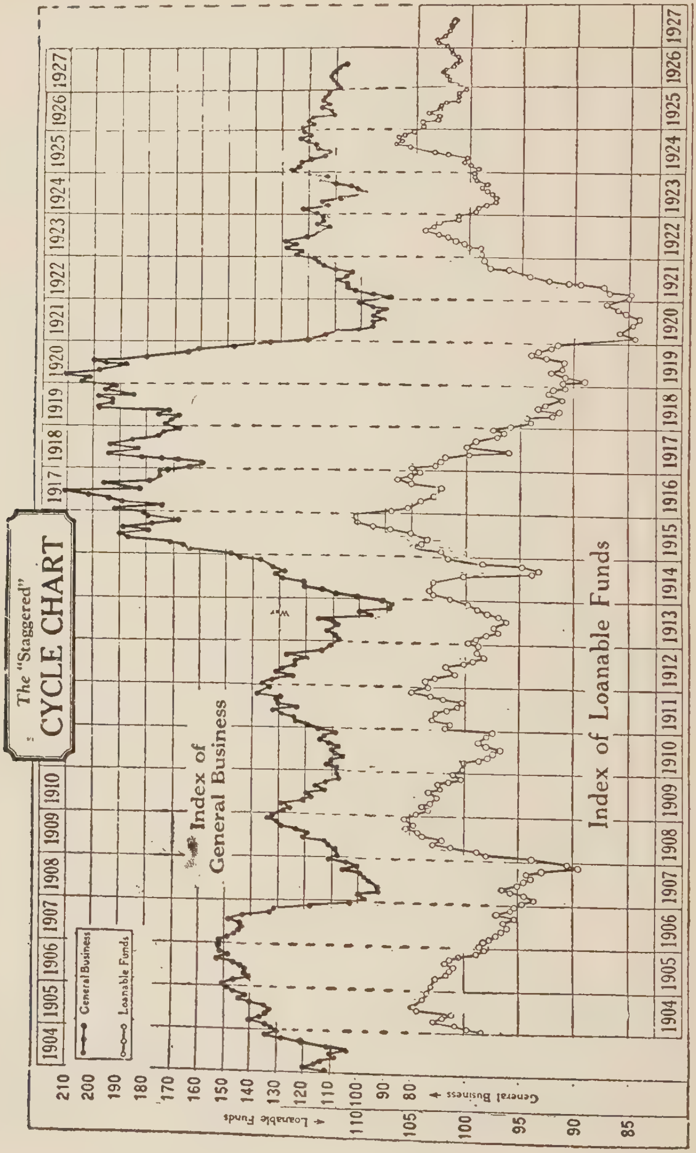
In forecasting the trend of the Index of General Business, the most useful barometer is an Index of Loanable Funds. A perpendicular rise in the Index of Loanable Funds, as in 1922 or 1924, foreshadows improvement in general business. This Index of Loanable Funds rises nearly a year ahead of the Business Index.

Or, stating the matter the other way round, the Business Index lags behind the Index of Loanable Funds, rising nearly a year behind it and falling a year, sometimes two years, after depletion of loanable funds begins. This fact is brought out more clearly if we "stagger" the chart, moving the bottom line twelve months ahead, so that the Index of Loanable Funds for 1922 will be placed under the Business Index for 1923, and so on for other years. (See p. 76.)

It will be noted that the two graphs move quite similarly in short cycles—those between 1908 and 1914 and between 1922 and 1927. In 1906 and 1907, however, the lag is greater than twelve months. In those years the prosperity period was prolonged due to the good crops of 1906 and considerable borrowing from Europe.

## "Business" Cycles Versus "Political" Cycles

The two curves do not dovetail closely during the World War. The Index of Business remains high long after the supply of loanable funds is badly depleted. That is to be expected. The war period pro-


The "Staggered"
CYCLE CHART
Index of General Business
Index of Loanable Funds
General Business
Loanable Funds
1904
1905
1906
1907
1908
1909
1910
1911
1912
1913
1914
1915
1916
1917
1918
1919
1920
1921
1922
1923
1924
1925
1926
1927
210
200
190
180
170
160
150
140
130
120
110
100
90
80
← General Business
← Loanable Funds
110
105
100
95
90
85

duced a "political" cycle. The Government demanded unlimited funds from the banks. Bankers could not fix a line of credit for the Treasury and then stop the war when that line of credit was reached; the Treasury dictated to the banks. The Government forced things beyond the limits of an ordinary business cycle.

Let us contrast this with the genuine "business" cycle. In a "business" cycle prices and production are regulated by merchants and manufacturers; the degree of lending is determined by the bankers. Each merchant and manufacturer has a line of credit in proportion to his capital and the reasonable needs of his business. The line of credit to one individual may be increased from year to year, but not to all business men indefinitely. When the banks are "loaned up" they begin to restrict credit. Trade halts. This point is usually reached after a year or two of trade expansion.

Thus, in a "business" cycle, when trade activity is controlled by business men and bankers, an Index of Loanable Funds is useful in forecasting the future. Trade fluctuates within the limits of bank credit.

## Sources of Purchasing Power

In a peace-time cycle it is necessary to supplement a study of the Cycle Chart by intensive analysis of changes in purchasing power in the basic industries. The Index of Loanable Funds gives a statistical indication of the future trend of purchasing power;

but the actual buying of goods must come from the incomes of people employed in the building trades, the automobile industry, railroad operations, etc., and from farmers. The value of the crops is about ten billion dollars per year, new construction work requires over eight billions annually, railway revenues approximate six billion, the sales of automobiles are equal to three billion dollars annually, and miscellaneous industries bring the total purchasing power up to eighty-five to ninety billion dollars a year or more. A discussion of automobile production and building will be reserved for a later chapter (Chapter XII).

The following table gives the value of the crops and other farm products in 1926.

Estimated Value of All Farm Products
United States, 1926

| Crops | Value | Per cent of Total |
|---|---|---|
| Barley | $ 112,000,000 | 1.2 |
| Corn | 1,862,000,000 | 20.1 |
| Grain sorghums | 79,000,000 | 0.9 |
| Oats | 514,000,000 | 5.5 |
| Wheat | 1,020,000,000 | 11.0 |
| Cotton | 1,249,000,000 | 13.5 |
| Apples | 218,000,000 | 2.4 |
| Other fruits | 448,000,000 | 4.8 |
| Hay and forage | 1,490,000,000 | 16.1 |
| Legumes | 124,000,000 | 1.3 |
| Sugars | 119,000,000 | 1.3 |
| Tobacco | 245,000,000 | 2.6 |
| Vegetables | 1,117,000,000 | 12.1 |
| Farm-Forest products | 318,000,000 | 3.4 |
| Other crops | 351,000,000 | 3.8 |
| Total | $ 9,266,000,000 | 100.0 |

| | | |
|---|---|---|
| Animal Products | | |
| Cattle | $ 1,081,000,000 | 14.8 |
| Horses | 101,000,000 | 1.4 |
| Sheep | 177,000,000 | 2.4 |
| Swine | 1,662,000,000 | 22.8 |
| Dairy products | 2,952,000,000 | 40.4 |
| Poultry products | 1,181,000,000 | 16.2 |
| Wool | 85,000,000 | 1.2 |
| Other animal products | 61,000,000 | 0.8 |
| Total animal products | $ 7,300,000,000 | 100.0 |
| Value of crops and animal products | $16,566,000,000 | |
| Deduct crops fed back | $ 3,581,000,000 * | |
| Estimated value of all farm products sold | $12,985,000,000 | |

* "Crops fed back" represent non-cash crops, the produce being utilized to feed live-stock on the farm. The approximate percentages of the various crops above, which are fed back to live-stock, are as follows:

| | | | | | |
|---|---|---|---|---|---|
| Potatoes | 10% | Barley | 75% | Forage | 100% |
| Hay | 85% | Grain sorghum | 90% | Rye | 20% |
| Corn | 85% | Oats | 80% | Wheat | 6% |
| | | Sweet potatoes | 15% | | |

## Commodity Imports and Industrial Activity

Raw and semifinished materials make up about three-quarters of the merchandise imported into the United States. Import figures, therefore, are an index of industrial activity. When mills are running at full capacity and manufacturers are using large quantities of raw material, imports are heavy. When business is poor and mill activity is curtailed, imports are light.

Imports, however, not only reflect current conditions, but they point to the future trend of industry. When manufacturing activity has been curtailed and imports have been small for a considerable period, it is obvious that supplies of merchandise in the country have been depleted, and the way has been paved for trade expansion.

Import figures are not an entirely satisfactory index of industrial activity because a large bulk of the raw materials used in mills is produced within the country—iron ore and cotton, for instance—and fluctuations in the consumption rate of these materials are not directly reflected in import figures. At the same time there is an indirect relation. Take silk and wool for example. We import all the silk that we consume and two-thirds of the wool. Small imports of these two commodities mean curtailed activity in the textile mills. In a period of depression manufacturing companies buy little new machinery and build few factories, and consequently the steel and lumber industries suffer. Unemployment in Lawrence and Paterson is thus extended to Pittsburgh and Chicago. Reduced pay rolls mean a curtailed purchasing power, and the automobile companies at Detroit have a hard time to find customers. And the railroads earn less because they have less freight to transport.

The quantity of silk and wool and other raw materials imported therefore does affect to a certain extent the rate of activity in the coal and steel districts, although these industries secure most of their raw materials at home.

In addition to silk and wool, import figures reflect directly the supply of rubber, tin, burlap, coffee, tea and cocoa, which are entirely produced in foreign countries. We also import about three-quarters of the sugar we consume, three-quarters of the hides and skins, half of the newsprint, and a quarter of the wood pulp. We also import some of our crude copper, petroleum and fertilizers. In the case of fertilizers, in fact, we import nearly all our nitrate from Chile and all our potash from Germany and France.

In 1926 twenty-five commodities made up nearly 64 per cent of the value of imports into the United States. Four commodities—rubber, silk, coffee and sugar—represented 33 per cent of the total value. Rubber, the leading import, represented over 11 per cent of the total value. The following table compares the values of the principal commodities imported in 1926 and 1925.

Principal Imports into United States by Value in 1926 and 1925

| Commodity | 1926 | 1925 | Per Cent Change |
|---|---|---|---|
| Rubber, crude | $506,000,000 | $430,000,000 | +17.7 |
| Silk, raw | 393,000,000 | 396,000,000 | — 0.8 |
| Coffee | 323,000,000 | 286,000,000 | +12.9 |
| Sugar, cane | 233,000,000 | 246,000,000 | — 5.3 |
| Paper, newsprint | 124,000,000 | 104,000,000 | +19.2 |
| Petroleum, crude and refined | 124,000,000 | 106,000,000 | +17.0 |
| Wool, raw | 107,000,000 | 142,000,000 | —24.7 |
| Tin, bars, etc. | 105,000,000 | 95,000,000 | +10.5 |
| Copper, ore, blister and refined | 98,000,000 | 83,000,000 | +18.1 |
| Hides and skins | 97,000,000 | 97,000,000 | 0.0 |
| Pulp, wood | 92,000,000 | 82,000,000 | +12.2 |
| Burlaps | 82,000,000 | 85,000,000 | — 3.5 |
| Fertilizers | 69,000,000 | 78,000,000 | —11.5 |

### Principal Imports into United States by Value in 1926 and 1925—*Cont'd.*

| | | | |
|---|---|---|---|
| Diamonds | 66,000,000 | 61,000,000 | + 8.2 |
| Tobacco | 61,000,000 | 71,000,000 | —14.1 |
| Lumber, boards, etc. | 54,000,000 | 55,000,000 | — 1.8 |
| Cotton, raw | 46,000,000 | 53,000,000 | —13.2 |
| Cocoa | 43,000,000 | 38,000,000 | +13.2 |
| Flaxseed | 41,000,000 | 40,000,000 | + 2.5 |
| Fish | 34,000,000 | 30,000,000 | +13.3 |
| Bananas | 32,000,000 | 30,000,000 | + 6.7 |
| Tea | 31,000,000 | 31,000,000 | 0.0 |
| Copra | 24,000,000 | 18,000,000 | +33.3 |
| Cocoanut oil | 22,000,000 | 20,000,000 | +10.0 |
| Cheese | 21,000,000 | 17,000,000 | +23.5 |
| Total 25 commodities | $2,828,000,000 | $2,694,000,000 | + 5.0 |
| Total other commodities | 1,603,000,000 | 1,533,000,000 | + 4.6 |
| Grand total | $4,431,000,000 | $4,227,000,000 | + 4.8 |

The following table compares the quantities of the principal commodities imported in 1926 and 1925.

### Principal Imports into United States by Quantities in 1926 and 1925

| Commodity | Unit | 1926 | 1925 | Per Cent Change |
|---|---|---|---|---|
| Rubber, crude | lbs. | 926,000,000 | 888,000,000 | + 4.2 |
| Silk, raw | " | 66,400,000 | 63,800,000 | + 4.1 |
| Coffee | " | 1,493,000,000 | 1,284,000,000 | +16.3 |
| Sugar, cane | " | 9,420,000,000 | 8,920,000,000 | + 5.6 |
| Paper, newsprint | " | 3,701,000,000 | 2,897,000,000 | +27.7 |
| Petroleum, crude and refined | gal. | 3,415,000,000 | 3,283,000,000 | + 4.0 |
| Wool, raw | lbs. | 310,000,000 | 339,000,000 | — 8.5 |
| Tin, bars, etc. | " | 173,000,000 | 172,000,000 | + 0.6 |
| Copper, ore, blister and refined | " | 765,000,000 | 642,000,000 | +19.2 |
| Hides and skins | " | 369,000,000 | 362,000,000 | + 1.9 |
| Pulp, wood | tons | 1,550,000,000 | 1,487,000,000 | + 4.2 |
| Burlaps | lbs. | 599,000,000 | 626,000,000 | — 4.3 |
| Fertilizers | tons | 2,100,000 | 2,300,000 | — 8.7 |
| Diamonds | carats | 834,000 | 732,000 | +13.9 |
| Tobacco | lbs. | 68,000,000 | 78,000,000 | —12.8 |
| Lumber, boards, etc. | B. Ft. | 1,868,000,000 | 1,815,000,000 | + 2.9 |
| Cotton, raw | lbs. | 181,000,000 | 157,000,000 | +15.3 |

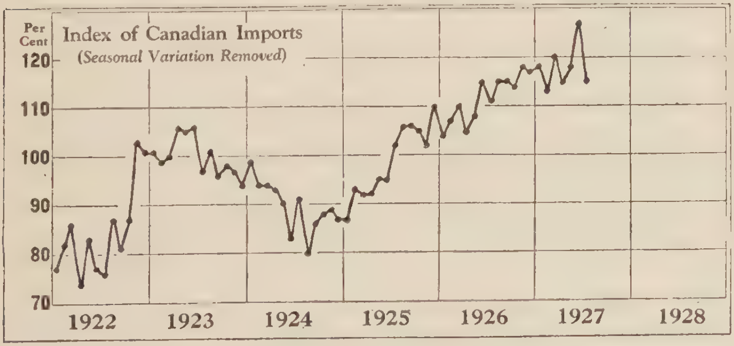
Principal Imports into United States by Quantities, in 1926 and 1925—*Cont'd.*

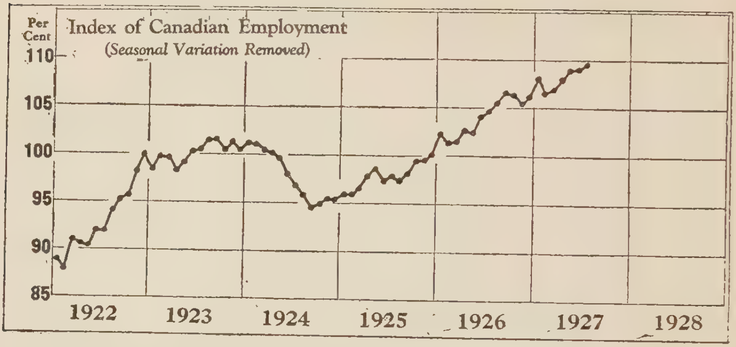
| | | | | |
|---|---|---|---|---|
| Cocoa .............. | lbs. | 426,000,000 | 382,000,000 | +11.5 |
| Flaxseed ............ | bu. | 23,000,000 | 17,000,000 | +35.3 |
| Fish ................ | lbs. | 324,000,000 | 276,000,000 | +17.4 |
| Bananas ............ | bunches | 56,000,000 | 55,000,000 | + 1.8 |
| Tea ................ | lbs. | 96,000,000 | 101,000,000 | — 5.0 |
| Copra .............. | “ | 458,000,000 | 364,000,000 | +26.9 |
| Cocoanut oil ........ | “ | 245,000,000 | 232,000,000 | + 5.6 |
| Cheese .............. | “ | 78,000,000 | 62,000,000 | +25.8 |

## Canadian Trade Statistics

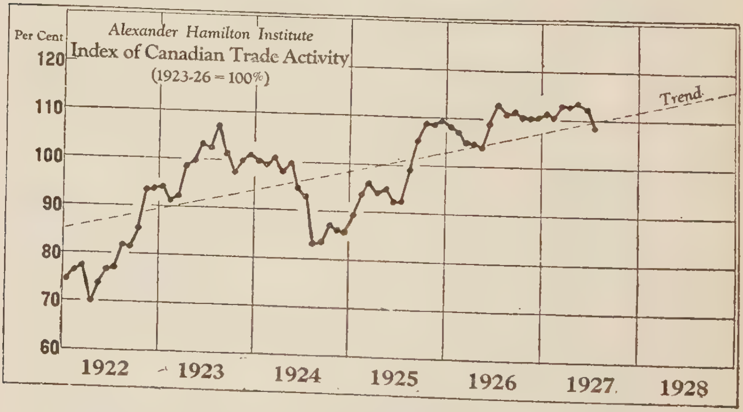
During the last five years the Dominion Bureau of Statistics has done much to improve the quantity and quality of the statistics of Canadian business conditions. We now have regular reports on freight car loadings, employment and bank debits in addition to such pre-war guides as bank clearings, foreign trade and building contracts.

The new employment index is compared with an index of Canadian imports in the accompanying charts, in both cases the seasonal variation being eliminated.

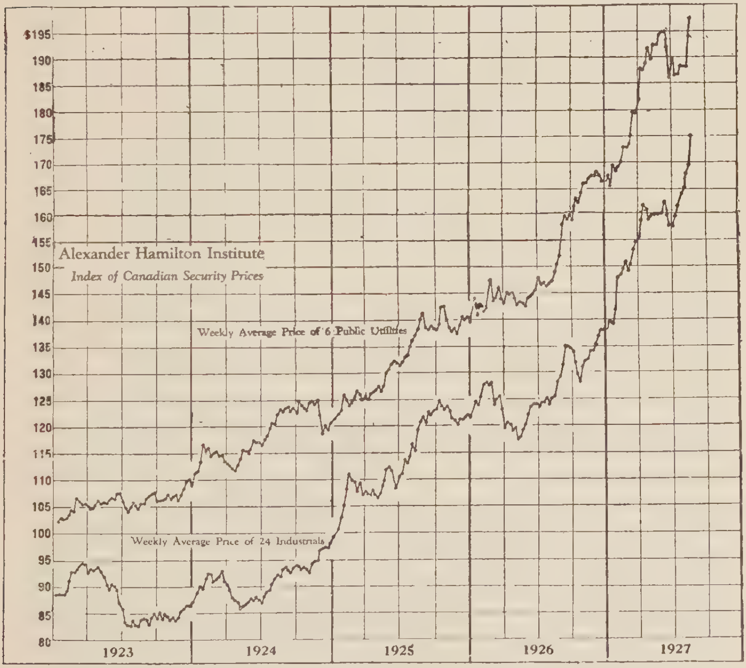




To construct a general index of Canadian trade activity we have averaged together these indexes of employment and imports with similar charts of such items as bank check transactions, freight car loadings and iron production.



On the Stock Exchanges of Montreal and Toronto many issues move in sympathy with the New York stock market. We have compiled weekly averages of twenty-four industrials and six utilities which illustrate this similarity of movement. The index of twenty-four Canadian industrials showed declines in sympathy with the reactions in New York in the summer of 1923, the spring of 1924, March, 1926, and October, 1926. The Canadian public utilities have been less influenced by the reactions in the New York market, as the accompanying chart of Canadian securities shows.



# CHAPTER V

## LOANABLE FUNDS

If Mr. Rich carries an average bank balance of $50,000, it may be inferred that he spends more than Mr. Clerk, who has on deposit only $200.

The bank balance of the General Motors Company in 1925 was $108,000,000, while the cash on hand reported by the Packard Motor Company in that year was only $4,500,000. This indicates that the annual disbursements of the General Motors Company for materials and pay rolls are much larger than those of the Packard Company, because the average bank balances of business concerns usually approximate a month's expenses, except where an abnormal amount of cash is accumulated for a special purpose.

As a general proposition, the spending power of the nation varies with the total bank deposits. The incomes of all the people in the United States totaled $31,200,000,000 in 1911; in that year total bank deposits were $16,000,000,000, a ratio of 1.95. This ratio has continued with remarkable steadiness over a period of years. Estimates of national income have been compiled by Dr. Willford I. King, of the National Bureau of Economic Research, up to 1921. These estimates are compared with the total bank deposits in the following table, the average ratio for twelve years being 1.95.

| Year | Bank Deposits * (Billions) | National Income ** (Billions) | Ratio, Income to Deposits |
|---|---|---|---|
| 1910 | $15.3 | $31.1 | 2.03 |
| 1911 | 16.0 | 31.2 | 1.95 |
| 1912 | 17.1 | 32.4 | 1.90 |
| 1913 | 17.5 | 33.3 | 1.91 |
| 1914 | 18.6 | 32.5 | 1.75 |
| 1915 | 19.2 | 35.9 | 1.87 |
| 1916 | 22.8 | 45.5 | 2.00 |
| 1917 | 26.4 | 53.9 | 2.04 |
| 1918 | 28.8 | 61.7 | 2.14 |
| 1919 | 33.2 | 67.3 | 2.03 |
| 1920 | 37.5 | 74.2 | 1.98 |
| 1921 | 35.2 | 62.7 | 1.78 |
| | | (12 year average) | 1.95 |

* From the Annual Reports of the Secretary of the Treasury. The series includes individual deposits and United States deposits, as of June 30, for all banks in the United States except the twelve federal reserve banks.

** From "Income in the United States," National Bureau of Economic Research, vol. 1, p. 13 (data for 1910-1918); vol. 7, p. 32 (data for 1919-1921).

The foregoing table supports the conclusion that the annual purchasing power of the people of the United States, as evidenced in the figures of national income, will average a little less than twice the total bank deposits. To forecast the general trend of purchasing power, we must have an opinion as to the trend of bank deposits.

The foregoing table shows a peak in deposits in

1920 followed by deflation in 1921. But quickly deposits soared to new peaks, the actual figures rising from 37.5 billion dollars in 1920 to 49.1 billion in 1926. This was a gain of 30 per cent. A corresponding increase of 30 per cent in the national income would mean that the actual figures had risen from 74.2 billion dollars in 1920 to 96.5 billion in 1926. The statistics of bank deposits for the past six years support this estimate. The figures in the table, covering both years of stable commodity prices before the war and years of phenomenal war-time inflation of prices, show that the national income has averaged about 95 per cent above deposits. Adding this percentage to deposits for the years 1922 to 1926 inclusive, we have the following estimates of national income:

Income Estimated, Constant Ratio Assumed

| Year | Bank Deposits * (Billions) | National Income (Billions) | Ratio, Deposits to Income |
|---|---|---|---|
| 1922.......... | $37.3 | $72.7 | 1.95 |
| 1923.......... | 40.3 | 78.6 | 1.95 |
| 1924.......... | 43.1 | 84.0 | 1.95 |
| 1925.......... | 46.9 | 91.5 | 1.95 |
| 1926.......... | 49.1 | 95.7 | 1.95 |

*Annual Report of the Secretray of the Treasury 1925 p. 369; includes "Individual deposits" and "United States deposits" as of June 30

A uniform ratio of 1.95 should not be used in all years. Comparing years of trade activity and trade depression before the war we find a ratio of 2.03 in 1910 and 1.75 in 1914. Similarly, each year during 1922–1925 requires special study as to trade activity, money market conditions and price movements. Arbitrarily we shall employ 1.87 for 1922 when recovery was slow, 1.95 for 1923 and 1924, 1.98 for 1925 and 1.90 for 1926. We then have the following estimates for 1922–1926:

Income Estimated, Variable Ratio Assumed

| Year | Bank Deposits (Billions) | National Income (Billions) | Ratio of Income to Deposits |
|---|---|---|---|
| 1922 | $37.3 | $69.8 | 1.87 |
| 1923 | 40.3 | 78.6 | 1.95 |
| 1924 | 43.1 | 84.0 | 1.95 |
| 1925 | 46.9 | 92.9 | 1.98 |
| 1926 | 49.1 | 93.3 | 1.90 |

In addition to the comparison of deposits with income, it is interesting to note that bank clearings "outside of New York" during 1910–1925 have averaged 4.6 times deposits. In years of credit restriction, such as 1914 and 1921, clearings have fallen to a 4 to 1 basis, while in 1919, 1923 and 1925, years of speculative activity, a 5 to 1 ratio has been approximated. The following table shows the three series, giving both actual figures and relatives (income for 1922–1926 estimated). In 1926 the income index is only 300 as compared with 321 for deposits and 350 for bank clearings.

| Year | Deposits | | Outside Bank Clearings | | National Income | |
|---|---|---|---|---|---|---|
| | Actual | Relatives | Actual * | Relatives | Actual | Relatives |
| | (Billions) | | (Billions) | | (Billions) | |
| 1910 | $15.3 | 100 | $66.8 | 100 | $31.1 | 100 |
| 1911 | 16.0 | 105 | 67.9 | 102 | 31.2 | 100 |
| 1912 | 17.1 | 112 | 73.2 | 110 | 32.4 | 104 |
| 1913 | 17.5 | 115 | 75.2 | 112 | 33.3 | 107 |
| 1914 | 18.6 | 122 | 72.2 | 108 | 32.5 | 105 |
| 1915 | 19.2 | 126 | 77.3 | 116 | 35.9 | 116 |
| 1916 | 22.8 | 149 | 102.3 | 153 | 45.5 | 146 |
| 1917 | 26.4 | 173 | 129.5 | 194 | 53.9 | 173 |
| 1918 | 28.8 | 188 | 153.8 | 230 | 61.7 | 199 |
| 1919 | 33.2 | 217 | 182.0 | 274 | 67.3 | 216 |
| 1920 | 37.5 | 245 | 208.3 | 312 | 74.2 | 239 |
| 1921 | 35.2 | 231 | 143.9 | 215 | 62.7 | 202 |
| 1922 | 37.3 | 244 | 157.8 | 237 | 69.8 | 224 |
| 1923 | 40.3 | 264 | 199.5 | 299 | 78.6 | 253 |
| 1924 | 43.1 | 282 | 205.2 | 307 | 84.0 | 270 |
| 1925 | 46.9 | 307 | 228.6 | 342 | 92.9 | 299 |
| 1926 | 49.1 | 321 | 234.0 | 350 | 93.3 | 300 |

* As compiled by the New York *Commercial and Financial Chronicle.*

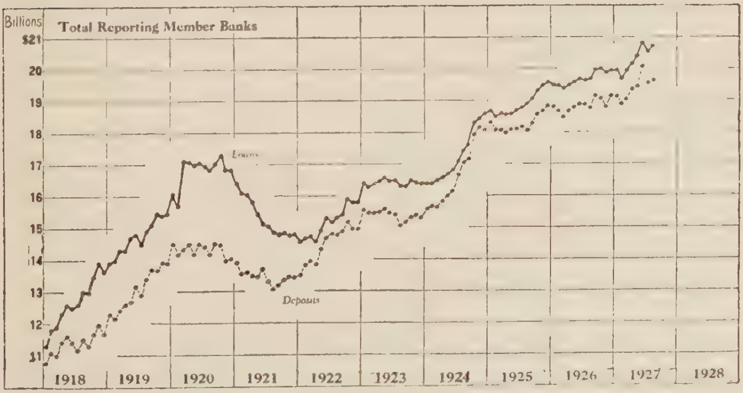
## Analyzing Bank Deposits

It is necessary for deposits to increase 3 per cent or more every year in order to prevent a declining tendency in commodity prices. Whenever deposits fail to increase, prices decline. This happened in 1921. It is impossible to forecast business conditions, however, merely by watching a chart of bank deposits. Deposits must be analyzed with reference to loans;

and both items must be considered with reference to the condition of the federal reserve banks.

The total deposits of all banks in the United States are compiled only once a year. Every year a call is issued for reports showing the condition after the close of business on June 30. These annual compilations of the total deposits, however, are not reported until several months later, and the figures, being published so late, are of little help in forecasting the trend of business.

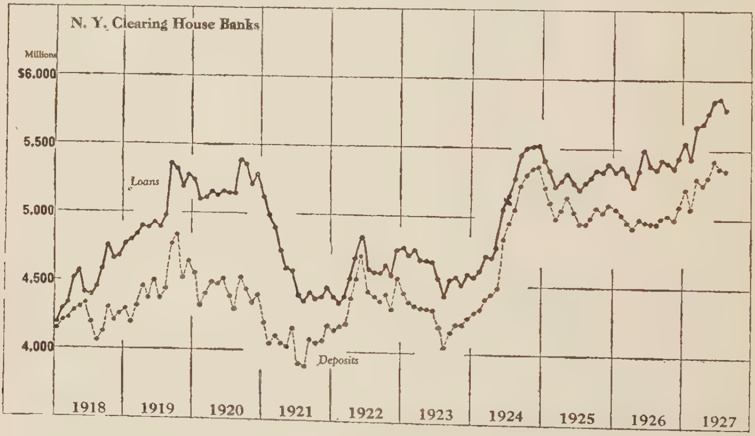
In following the trend of banking conditions from week to week, we must depend mainly upon the weekly reports of "members" of the federal reserve system. The Federal Reserve Board compiles a weekly report of the statements of over six hundred of the largest member banks. This report is compiled as of Wednesday each week, and is published in the daily papers on the following Tuesday.



There is also a weekly report of the New York Clearing House banks compiled at the close of business every Saturday noon and made public an hour later.

### The New York City Banks

In the report of the New York banks, it is found that the total loans and securities are from 2 to 9 per cent in excess of the deposits in ordinary years, the excess being around 2 per cent when business is dull and climbing to 9 per cent when there is an active demand for loans. When loans are only 102 to 105 per cent of deposits, a condition of easy money is indicated. When the ratio is 110 or 115 per cent, however, a degree of credit distension may be inferred.



This ratio seldom rises above 110 per cent, except in an abnormal year, such as 1920. When the excess of loans above deposits is greater than 10 per cent, it is time to watch elsewhere to keep informed on the credit situation. Such loan inflation always means that the New York banks have loaned to the full amount of their own resources, or more, and are forced to seek aid from the New York Federal Reserve Bank. At such a time, the weekly statements of the federal reserve banks reflect current progress toward better or worse conditions.

## Federal Reserve Barometers

The condition of the federal reserve banks is indicated by the "reserve ratio" (the ratio of reserves to combined deposit and federal reserve note liabilities). According to recent experience, when the reserve ratio of all twelve federal reserve banks combined is 75 per cent, conditions are normal. When the ratio is between 80 and 85 per cent, money conditions are easy. When the ratio falls substantially below 70 per cent, however, money conditions are fairly tight. A ratio of 40 per cent indicates a severe crisis.

These figures and their indicated significance are based upon the record of the brief period since 1919. Final conclusions as to what ratio will indicate normal conditions and what ratio will indicate tight money conditions must wait until we have observed the trend of the reserve ratio for another ten or twenty years. Meanwhile, it will always be in order to supplement an observation of the federal reserve ratio by alert attention to what the Federal Reserve Board in Washington thinks of the situation. The Board frequently publishes an opinion regarding business conditions, but it is unnecessary to wait for prepared statements. The official opinion is always expressed in the rediscount rates of the twelve federal reserve banks.

How do the federal reserve banks determine what the official rediscount rate shall be? There is no settled policy of fixing the rediscount rate. In past generations the Bank of England always observed the policy of increasing its Bank Rate 1 per cent whenever the open market discount rate climbed ahead of the Bank Rate. The Federal Reserve Board, however, does not follow that policy. Sometimes open market discount rates in New York will be relatively higher than the official rediscount rate of the New York Federal Reserve Bank for several months at a time. The Federal Reserve Board insists on giving some consideration to the general state of production and employment, and the trend of commodity prices. However, that is not important from the standpoint of business forecasting.

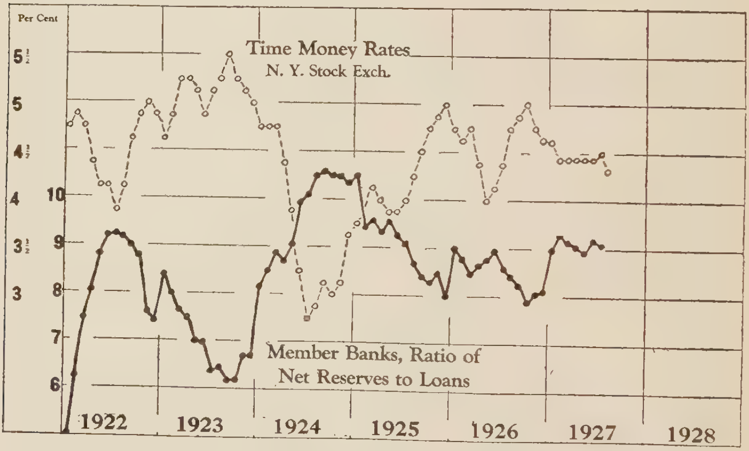
It is not necessary to wait until the Reserve Board takes action regarding an increase in the rediscount rate to size up the situation. In the long run, the federal reserve banks will have to fix their rediscount rates with close attention to the trend of open market rates. A study of open market rates will reveal what the Reserve Board ought to do. In New York the official rate of the Federal Reserve Bank should be kept slightly above the open market rate for bankers' acceptances and slightly below the open market rate for prime commercial paper. The Federal Reserve Board will never dare to depart very far from this rule.

In one respect, open market discount rates are a better trade barometer than the Federal Reserve rates. Sometimes the sensitive open market rates start on a new trend while the official New York Reserve Bank rate remains unchanged. They are sensitive to changes in the condition both of the member banks and of the federal reserve banks.

## Open Market Rates

The open market discount rates in Boston, Philadelphia, Chicago and other large cities do not reflect the general banking condition of the United States as well as the open market rates in New York City. That is because the banks in other cities send idle money to New York when local demand will not keep funds fully employed. The situation in New York City accordingly reflects the general condition of the country as a whole. It is better, therefore, to study the open market rates in New York, alone, instead of making an average of the rates in Boston, Philadelphia, Chicago and other money centers.

The four items of chief interest in the open money market are choice commercial paper, bankers' acceptances and rates on call and time loans on the New York Stock Exchange. There are also call money rates against acceptances arising out of commercial transactions, but the volume of these is much smaller than the call loans secured with Stock Exchange collateral.

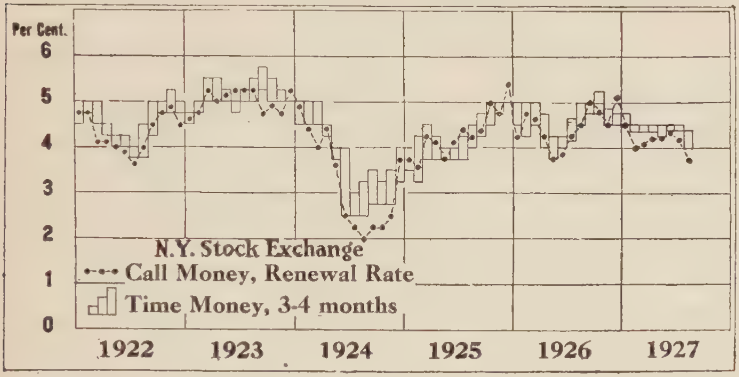


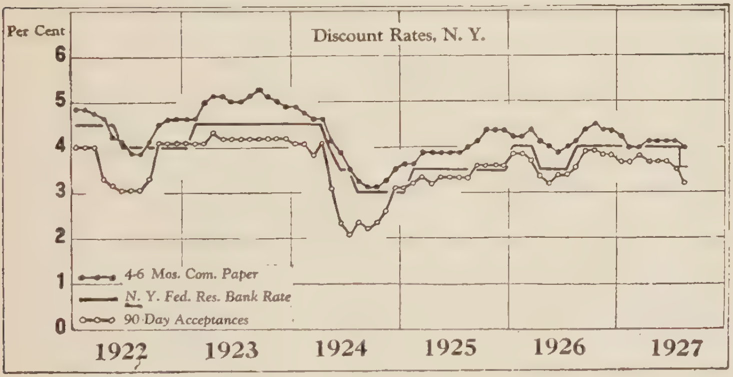
The following table shows the open market rates of these different classes of loans in September, 1923, and September, 1924. It will be noted that acceptances are lower than the rates on commercial paper and that call money rates are lower than the time money rates.

Money Rates, New York

| | Sept. 15 1923 Per Cent | Sept. 15 1924 Per Cent |
|---|---|---|
| 4–6 mos. choice commercial paper .... | 5 | 3 |
| 90 day acceptances ............... | 4⅜ | 2¼ |
| 3–4 mos. Stock Exchange loans ..... | 5½ | 3 |
| Stock Exchange demand (call) loans . | 5 | 2 |
| Rediscount rate, Federal Reserve Bank | 4½ | 3 |

The following diagrams show the trend of these items since January, 1922.





## Stock Market Loans

During recent years, the growth of loans on securities has been phenomenal. From June, 1924, to August, 1927, the funds in stocks and bonds of reporting member banks increased over 45 per cent, while commercial loans increased 10 per cent, as the following table shows.

Member Banks

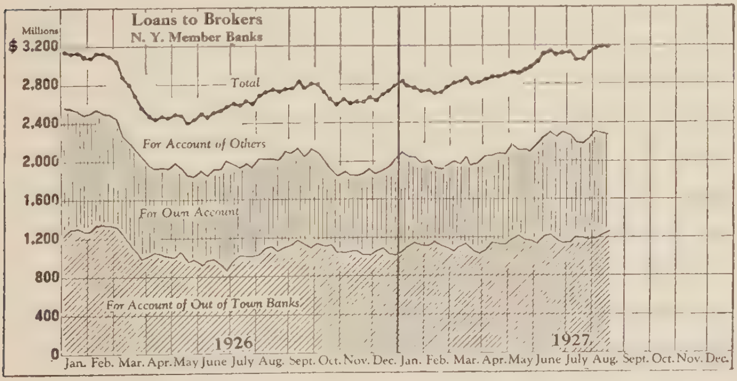
| | June 4, 1924 (749 Banks) | August 24, 1927 (661 Banks) | Increase Per Cent |
|---|---|---|---|
| Commercial loans | $7,826,430,000 | $8,619,176,000 | +10.1 |
| U. S. Government securities | 2,462,443,000 | 2,597,383,000 | + 5.5 |
| Stocks and bonds | 6,373,466,000 | 9,243,698,000 | +45.2 |
| Total loans and investments | $16,662,339,000 | $20,460,257,000 | +22.8 |

The loans on securities may be divided into two classes: loans made to Stock Exchange members, and loans to other borrowers. We do not have such statistics for the whole country. Since January, 1926, however, the New York City banks have compiled special reports on the amount of loans to Stock Exchange brokers and dealers in securities; these loans to brokers may be subdivided into two classes, time loans and demand (call) loans. Call loans may be withdrawn from the borrower the next day after the loan has been made. That is, a lender may provide a million dollars on Tuesday morning and withdraw the loan on Wednesday morning. The borrower must risk financial embarrassment. In Wall Street, however, it is taken for granted that there will usually be plenty of money available for such loans, and the aggregate of call loans is surprisingly large. In the following table it will be noted that the call loans on different dates are nearly twice as large as the time loans. (The decrease in loans between the dates in the table was attended by heavy liquidation in the stock market.)

Loans to Brokers, New York Banks

| | Feb. 17, 1926 | June 2, 1926 | Change |
|---|---|---|---|
| Call loans .......... | $2,160,000,000 | $1,801,000,000 | $—359,000,000 |
| Time loans ......... | 979,000,000 | 692,000,000 | —287,000,000 |

These loans to brokers may be subdivided in another fashion, according to the amount of money placed in loans to brokers for the account of out-of-town correspondents and the amount which the New York banks make for their own account. It is very desirable for an investor to watch the brokers' loans which depend on funds from out-of-town correspondents. During a period of trade expansion it is likely that these loans will be recalled from New York by the out-of-town banks. Such a development is usually a danger signal in the stock market. The following chart, however, shows that when the loans for the account of the out-of-town banks were reduced in March, 1926, there was also a substantial decrease in loans to brokers for the account of the New York banks themselves.



The foregoing charts and tables relate to the structure of the money market. By watching the general trend of loans and deposits and also the changes in call loans, time loans and other classes of bank credit, the business man or investor can form a fairly accurate opinion as to the trend of the supply of loanable funds. The work of interpretation, however, requires an understanding not only of the structure of the banking system and the money market, but also a knowledge of banking principles.

The concept of what is meant by "loanable funds" will not be clear unless the general nature of bank credit is well understood.

## Interpretation of Loanable Funds

The first thing to consider in the interpretation of loanable funds is that bank deposits do not represent gold. On June 30, 1924, there were three billion dollars in gold on deposit in 29,000 banks in the United States. The "total deposits", however, were forty-three billion. The remaining forty billion represented deposits, or the equivalent of deposits, of copper, silver, lead, wheat, cotton, rubber, petroleum, wool, silk, lumber, automobiles, clothing, steel, office buildings, residences, factories, real estate and "promises".

When a man deposits $10,000 of gold, the bank places the metal in its vaults and enters a credit of

$10,000 in the deposit book of the depositor. When a man "deposits" lumber, the process becomes more complicated. Lumber is too bulky to be placed in bank vaults. If a lumber dealer wishes to deposit $15,000 of lumber in order to get a credit of $10,000 in his deposit book, the banker accepts his promissory note for $10,000, with the lumber pledged as collateral, and enters a credit of $10,000 (less discount) in the deposit book. In the first case the statement of the bank shows: asset, $10,000 gold; liability, $10,000 deposit. In the second case the bank statement shows: asset, $10,000 lumber note discounted; liability, $10,000 deposit (less discount). If the lumber dealer draws a check for $150 against this deposit to pay his rent, he is really giving his landlord $150 worth of lumber. The check is based on lumber. Similarly, when a billion dollars of checks pass through the Clearing House, it means virtually that a billion dollars' worth of commodities and real estate has passed through the Clearing House. The checks really mean that lumber, coffee, rubber, hardware, clothing and other commodities have been put into circulation by proxy.

The most important fact in the interpretation of the business cycle is that the banks have charters which permit them to "create" bank deposits against the pledge of commodities and real estate. Subject to legal restrictions, such deposits can be increased indefinitely if the owners of commodities and real estate desire to borrow and the banks are willing to lend. The inflation period of a business cycle is always featured by an increase of "commodity deposits". Even in case of deposits created against pledge of stocks and bonds, a large part of the ultimate security is the merchandise and other property of corporations.

In this connection let us point out that *when the banks are said to have a large surplus of loanable funds, it does not mean that they have a given amount of surplus gold on hand, but the legal power to create new deposits against the pledge of commodities, securities, etc.* They are in a position to accept promissory notes from borrowers and give them the right to draw hundreds of millions of dollars in checks. Reversely, when we say that money is tight, we mean that the banks have already expanded their deposits by the discount method to the point where their own resources are exhausted and they are forced to borrow an excessive (above average) amount from the federal reserve banks.

An excessive amount of currency and checks in circulation means that the banks have gone as far as safety permits in the matter of increasing credit. Thus we say that money is "tight" at the very time when the amount of currency in circulation is at a maximum. But when borrowers bring currency to the banks to pay off old loans, the banks are placed in a position to resume expansion of credit. Thus money becomes "easy" at the banks after the circulation of checks and money is reduced.

Many business men are confused on this point. When the money in circulation is reduced and people have less in their pockets to spend, merchants say money is tight. To them poor collections mean tight money. But when collections are poor because of unemployment and dull trade, money is "easy" in financial circles, because the banks are in a position to increase discounting.

There is a difference between "loanable funds" and "funds loaned". When funds are loaned and put into circulation, collections improve; but bank credit becomes harder to get and in financial circles money is tighter. Slow collections synchronize with easy money, while collections are good when tight money prevails in banking circles.

## Where Loanable Funds Accumulate

The commercial banks in the larger cities receive deposits from hundreds of small banks throughout the country. The railroads, the United States Steel Corporation, the American Tobacco Company and many other industrial corporations occasionally have surplus cash which remains in the banks earning 2 or 3 per cent interest. When trade is dull, the idle cash of business corporations increases. The supply of loanable funds is at the peak when trade is at the lowest ebb.

The New York City banks must have a legal reserve of 13 per cent against net demand deposits (except deposits of the United States Treasury). This legal reserve consists of a deposit in the New York Federal Reserve Bank. Cash in their own vaults does not count as legal reserve.

If the National City Bank of New York adds to its balance at the Federal Reserve Bank, it can create new deposits on its own books. Because of this legal privilege, there is always room for a rapid inflation of credit whenever it receives an influx of idle funds from interior banks and business corporations. If a bank in Michigan deposits idle funds in the National City Bank in New York, the latter, legally, can increase its loans by over six times the amount deposited. For instance if $13 is sent from Detroit to the National City Bank, the latter can put the $13 in the Federal Reserve Bank and lend $87 to brokers doing business on the New York Exchange. The $13 in the Federal Reserve Bank becomes a legal reserve against $100, including the $87 loaned to brokers and the $13 received from Detroit. Actually, of course, this legal extreme cannot be reached because of immediate withdrawals by the borrowers.

Idle money received from interior banks is usually loaned to brokers and speculators, not because the banks prefer to lend for speculative purposes, but because at those times when idle money is received from the interior, trade is dull and merchants and manufacturers do not care to borrow. It is a regular feature of the business cycle to have a broad expansion of speculation on the Stock Exchange when trade is dull. It arises from the idle funds being sent to New York from the "interior". The New York banks always stand ready to pay around 2 per cent on demand deposits.

The foregoing illustration of how an idle surplus of funds may permit loan expansion, however, does not give us a basis of estimating the total supply of loanable funds in the country at a given time. To most business men this concept of the supply of loanable funds is rather vague. In fact, the "legal surplus" of loanable funds is a rather nebulous figure. *It can be computed, but it cannot be loaned.* Let us explain.

## The Legal Surplus of Loanable Funds

To estimate the legal surplus of loanable funds, we first calculate the actual surplus reserve of the federal reserve banks; then estimate how much the member banks might increase their loans arithmetically on the basis of this legal surplus. We must answer two questions:

1. What is the balance of "free cash" in the federal reserve banks after setting aside legal reserves against note circulation and deposits?
2. How much credit can be extended to member banks against this free surplus, and how much credit, theoretically, can member banks extend to customers?

The law requires a gold reserve of 40 per cent against federal reserve notes in circulation; it also requires a "lawful money" reserve (gold, greenbacks and silver dollars) of 35 per cent against the deposits received by the federal reserve banks. A published statement in May, 1925, showed that a gold reserve of $670,000,000 was required against circulating federal reserve notes; a lawful money reserve of $770,000,000 against deposits. The total legal reserve requirements were $1,440,000,000. But the actual cash reserves of the federal reserve banks on that date were nearly $3,000,000,000, leaving a legal surplus of "free cash" amounting to $1,560,000,000.

This "free cash" is the basis of our calculation of the theoretical supply of loanable funds permitted by law. In making the calculation we reach a figure which is impossibly large. The law states that for every $35 to $40 of "free cash" in its vaults, the federal reserve banks can lend $100 to the member banks. That is, the federal reserve banks can lend the member banks about 2.75 times the "free cash". On the basis of the free cash of $1,560,000,000 calculated above, the federal reserve banks could advance to member banks about $4,300,000,000. The latter would leave this on balance in the reserve banks as legal reserves. And on the basis of this addition to legal reserves, the member banks could lend over $30,000,000,000 of new credit to business concerns. This theoretical computation was the legally permitted surplus of loanable funds in the United States in May, 1925.

In actual practice, however, it would not be possible to expand credit more than 10 or 15 per cent of this amount in any one year without causing trouble.

## Money Market Limitations on the Legal Privilege

The reason why the legal maximum of lending cannot be reached is that the moment we begin to increase loans and deposits, economic forces are set in motion which cause a depletion of the cash reserves. As soon as the banks have increased loans a few billion dollars, there is an inflation of the prices of silk, wool, rubber, sugar, hides and other imported commodities. If these commodities should rise 50 or 100 per cent in price, it would be necessary to send gold out of the country to pay for imports. Rapidly the "free cash" would be reduced; the theoretical supply of lendable credit would then be reduced in proportion.

Moreover, once gold leaves the country it is difficult to retrieve it. A large amount of the gold which disappears from New York, London and other money centers finds its way to India, where it disappears permanently into the private vaults of Indian princes and other men of wealth in that country. India gets this gold by exporting jute, cotton, wheat and a few other commodities. If prices are increased 100 per cent, they can acquire twice as much gold as when prices are normal. Consequently, during a period of excessive credit inflation and abnormally high prices, gold tends to take flight to Asia from Europe and America; a large part of the fugitive gold becomes a permanent loss to the commercial world.

That is one good reason for maintaining a stable structure of credit and commodity prices. In the interest of future stability it is better to impound surplus gold in America than to permit it to escape to India. Ultimately, it is possible that the Indian princes will bring forth their hoards of gold and silver and invest them in new factories and public utilities in their own provinces. The modernizing of India, as Indian princes change from medieval rajahs to modern capitalists and captains of industry, will tend to keep gold in commercial circulation. For the present, however, large amounts of gold continue to go to India and are locked up in well guarded private vaults instead of entering bank reserves in Bombay and Calcutta.

## The Practical Limit of Lending

It is worth while to note that during the past century, credit inflation has usually been permitted to continue to extremes—it has been permitted to proceed indefinitely until a banking crisis has been precipitated by a loss in gold reserves. But lending operations should not be permitted to run to the extremes which result in panics, and in the United States since 1922 the word "practical" has taken on a more enlightened meaning. Instead of trusting to the practical limitations of the money market, we are enjoying the practical control of the Federal Reserve

Board. In 1923 the Federal Reserve Board announced a policy of regulating lending according to the needs of production and employment, instead of permitting the banks to expand credit indefinitely until stopped by a loss of gold and a banking crisis. The private banker considers mainly how far loans *can* be expanded; the Reserve Board studies to determine how far credit *should* be expanded. Bank credit in the United States is being regulated with regard to human welfare rather than with regard to the legal maximum of lending permitted by the Federal Reserve Act.

## Loanable Funds and New Financing

When we say that an increase in the supply of loanable funds tends to produce a recovery in trade activity, we do not mean that trade begins to recover as soon as the supply of loanable funds begins to increase. On the contrary, there is a lag in trade recovery. *The peak of trade activity is usually reached a year or more after the peak in the supply of loanable funds is witnessed.*

The reason is that much new financing must be done as a preliminary to industrial revival. An increase in the supply of loanable funds merely permits an expansion of new financing. It takes time to sell corporation bonds and real estate mortgages. Even when the plans of building contractors are perfected, a certain amount of time is required to issue new securities. Moreover, after the securities are sold, the money obtained for new construction work is not spent all at once. The money is paid out for materials and labor over a period of several months, and meanwhile the money put into circulation does not restore activity to all lines of business uniformly or simultaneously.

Thus, while easy money *permits* trade recovery, several months are required to generate business revival. If the previous crisis has not been severe, if confidence has not been badly shaken, the sale of these securities can proceed quickly and trade revival will develop at an early date. If, however, the previous crisis has been severe; if a prolonged period of readjustment is necessary before commodity prices and labor costs drop to a basis which will stimulate action among projectors of new construction work, trade revival will be slow in developing.

## Bond Prices and New Financing

In explaining the lag between easy money conditions and trade recovery, we may carry the analysis one step further. The prices of old bonds already outstanding begin to recover as soon as the supply of loanable funds begins to increase. But new financing does not expand exactly in proportion to the rise in bond prices. In fact, there is a practical benefit in waiting until the bond market has reached a high level before beginning the sale of new securities. It is desirable to wait a few months after a business crisis until bond prices have risen substantially and the cost of labor and commodities has been reduced. When the most attractive moment has arrived for the sale of new corporation bonds and real estate mortgages, a period of business improvement can be predicted, based upon the favorable conditions for new financing.

At the culmination of the cycle, new construction work and trade activity tend to continue for some months after new financing is discouraged by unfavorable money market conditions. Once new construction projects are under way, and the money necessary for their completion has already been provided by the sale of new securities, contractors will usually proceed with the spending of their money until the building program is completed.

The following table shows the classification of new securities issued in the United States to obtain new capital in 1925 and 1926 (refunding issues not included).

Securities Issued for New Capital in United States *

| *Corporate Issues* | 1926 | 1925 | Per Cent Change |
|---|---|---|---|
| Railroads | $ 345,991,000 | $ 380,280,730 | — 9.0 |
| Public Utilities | 1,604,385,376 | 1,496,098,404 | + 7.3 |
| Iron, Steel, Coal, Copper, etc. | 193,247,000 | 133,082,996 | +45.1 |
| Equipment manufacturers | 17,787,500 | 13,766,000 | +28.9 |
| Motors and Accessories | 131,373,624 | 186,145,721 | —29.5 |
| Other Industrial and Mfg. | 526,926,724 | 501,449,508 | + 5.2 |
| Oil | 262,687,690 | 168,357,528 | +56.1 |
| Land, Buildings, etc. | 709,466,980 | 715,484,550 | — 0.8 |
| Rubber | 43,214,537 | 64,750,000 | —33.3 |
| Shipping | 21,450,000 | 30,104,895 | —28.9 |
| Miscellaneous | 500,472,319 | 411,204,835 | +21.7 |
| Total Corporate | $4,357,002,750 | $4,100,725,167 | + 6.2 |

* From the New York *Commercial and Financial Chronicle.*

## Securities Issued for New Capital in United States—*Continued*

| *Other Issues* | 1926 | 1925 | Per Cent Change |
|---|---|---|---|
| Foreign Government | $ 481,251,000 | $ 540,781,000 | —11.1 |
| Farm Loan Issues | 91,125,000 | 168,697,100 | —46.2 |
| Municipal, U. S. | 1,310,585,724 | 1,355,789,152 | — 3.3 |
| Municipal, Canadian | 60,792,000 | 49,158,000 | +23.6 |
| Municipal, United States Possessions | 10,422,500 | 8,715,000 | +19.5 |
| Grand Total | $6,311,178,974 | $6,223,865,419 | +1.4 |

# CHAPTER VI

## FORECASTING THE STOCK MARKET

Even the casual newspaper reader will have called to his attention at times that "prices of stocks soared to new highs" or that "further declines carried stock prices to their lowest levels for the year". The reader of the financial page will follow these movements more closely. When movements of stock prices are referred to in this manner, it may be a surge of buying or selling that carries nearly all stocks along, or reference may be made to some spectacular market leaders. All stocks will not make their highs at the same time or their lows at the same time. But to follow the movement of the market intelligently, some means to portray the action of representative stocks must be found. This means is obtained by the selection or "sampling" process. A number of the soundest, most representative and active stocks are taken and their average price, if the selection is well made, will portray in a general way the swing of the bulk of stocks which are traded in.

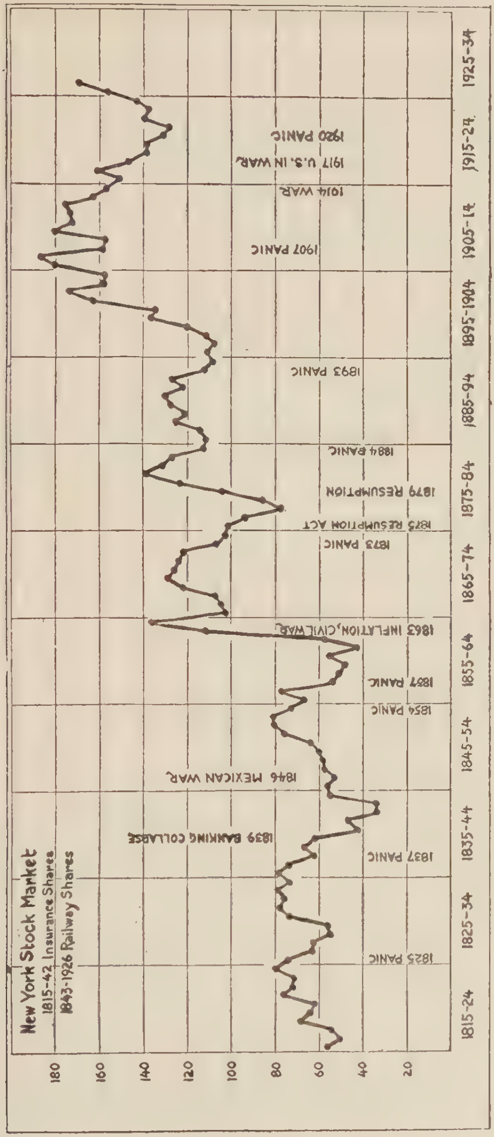
### Stock Market Cycles

Now, if the course of such an average is plotted in graphic form for five or ten, or more, years, recurrent advances and declines stand out very clearly. These movements have no periodicity, that is, their recurrence and duration cannot be measured by time. But they have regularity, that is, the market is always headed somewhere. It may be headed upward or it may be headed downward, but it will be noted that it never, for any length of time, is stationary.

This fact, the existence and the regularity of cycles in the security markets, is the one salient and important fact for the business man. Is there any general relationship between cycles in the stock market and cycles in business? How may cycles in the security markets be availed of for the purpose of making money in them? It is this latter inquiry with which we are principally concerned now.

## The Stock Market as a Forecaster of Business

If any series of data fairly representative of the course of business is plotted in conjunction with a graph of stock prices, a certain rough correlation is immediately evident. The correlation is regular enough and exact enough to indicate the two cycles are not independent of each other. There is a relationship between them. This relationship will be found to have these two major characteristics. First, the movement of the two cycles is generally harmonious, at least for the greater part of each business swing. Business prosperity proceeds hand in hand with rising stock prices and depression is at-


New York Stock Market
1815-42 Insurance Shares
1843-1926 Railway Shares
180
160
140
120
100
80
60
40
20
1815-24
1825-34
1835-44
1845-54
1855-64
1865-74
1875-84
1885-94
1895-1904
1905-14
1915-24
1925-34
1825 PANIC
1837 PANIC
1839 BANKING COLLAPSE
1846 MEXICAN WAR.
1854 PANIC
1857 PANIC
1863 INFLATION, CIVIL WAR.
1873 PANIC
1875 RESUMPTION ACT
1879 RESUMPTION
1884 PANIC
1893 PANIC
1907 PANIC
1914 WAR.
1917 U.S. IN WAR.
1920 PANIC

tended by declining prices. A second characteristic is that the change in direction will be manifested first in the stock market cycle. Stocks commence to decline before evidence of curtailment may be noted in many lines of industry; they advance while the man in the street is still unable to discern any marked indications of improved activity in trade. So regular are these phenomena that the stock market is rightly accepted as one barometer of business.

But the fact that the stock market is a forecaster of business is of no particular help to the man who would make money by taking advantage of the swings of the stock market cycle itself. What forecasts the swings in the stock market?

## Barometers of Major Movements

Methods ranging in their nature from elaborate mathematical calculations based upon various trade statistics to modes of "reading the tape" have been devised in the constant quest for some infallible method of foretelling the movements of stock prices. It will conduce to clear thinking to commence, not with barometers, but with motives. Why do people buy stocks? Why do they buy bonds? In answering this, leave out of account people who buy on "hunches", "tips", or whose motives are akin to those of the speculator who buys a parimutuel ticket or who makes a play upon the turn of the wheel.

A man who goes into a business does so because he expects to make money in it. Shares of common stock represent participation in the ownership of a business. So it may be said that the thinking investor who buys stocks does so because he believes that the company in which he places his money is going to prosper. If it prospers it will return him increased dividends and a profit in the enhanced price of its shares. It may be that the business is new and that he foresees a good future for it and selects the shares of a given company as being one which will be a leader in that industry. The investor may be placing his money in stocks of old, long established enterprises, such as Western Union, or the Atchison, Topeka and Santa Fe Railroad or United States Steel. He does so because he believes their growth will continue. But the tide of business has its ebbs and flows and because stock prices advance and recede, the scientific investor does not plan to buy a stock and keep it for the greater part of his lifetime. His object is to buy when business is depressed and when stocks are on the bargain counter and to sell when some speculative wave has led, for the time being, to enthusiasm that has lifted prices out of line with prospective earning power. To do this he must observe stock market barometers.

## Buying Points and Selling Points

No experienced investor expects to catch top prices when he sells stocks, nor does he expect to buy them at the very lowest quotations. If he makes his purchases and sales at approximately top and bottom levels, he has done all that it is reasonable to anticipate. Accordingly, the operator for long swings, giving attention to conditions in the business world and in the money market that have been referred to, will follow these rules:

> *He will buy* when production has been on the decline sufficiently long to raise the presumption that any previous condition of overproduction has been rectified.
>
> *He will buy* when easy money conditions are indicated by low rates on time loans and plentiful net bank reserves relative to loans.

The coincidence of a continued decline in production and of an increase in bank reserves and deposits means not only that overproduction has been rectified, but that credit will be readily available for business expansion as the demand for goods absorbs existing stocks and requires once more an increase in manufacturing activity.

The reverse of these two situations points to the desirability of selling. A prolonged rise in manufacturing activity means that more and more goods have been turned upon the market. Either demand is increasing in exact step with increased production or part of the larger output of goods is remaining on the shelves of dealers and is not finding its way into channels of consumption. This latter situation usually develops after production has shown a long and steady increase. The manufacturer tends to expand his plant capacity and increase his operations up to the very last minute. This cannot be done without calling upon the banks for assistance, and with expansion of manufacturing activity is found normally an expansion in loans. But increased loans for commercial purposes in time result in depletion of the supply of loanable funds. The supply of credit for stock market operations becomes smaller. It may be necessary to encroach upon brokers' loans to supply funds to commerce. A coincidence of subnormal banking net reserves and industrial overproduction indicates the desirability of selling speculative securities.

## Characteristics of Bull and Bear Markets

So far we have been dealing entirely with one method of utilizing funds in the stock market—that of operating solely on major swings. Not all people —in fact, a relatively small percentage of people—do operate in this fashion. Nor is there any particularly valid reason why commitments should be made only at yearly or two-yearly intervals, and then funds held in suspense through investment in short-term securities or left in the savings bank while the market goes through the process of working down to a new starting point. It may readily develop that the position of the investor can be improved to advantage by shifting his holdings at various times while the market is making one of its major upward or downward progressions.

There are swings within swings. No market yet has ever started up and kept on going without a setback. No market has ever yet started to decline and gone on down without intermediate rallies. Thus we have breaks and reactions in bull markets and rallies in bear markets. These intermediate movements, which do not alter the trend of the market but which merely interrupt it, are productive of considerable loss and of considerable disappointment.

When the trend is upward, there is a tendency to attempt to take advantage of these intermediate movements by selling stocks which have already advanced considerably in the belief that they can be picked up at lower prices during a brief reaction. This is more likely to lead to regret than it is to result in profits. When business is improving, securities of the strongest companies in lines where business is most active will be those to lead the advance. Conversely, when business activity is curtailed, the stocks of the weakest units in the weakest industries form the advance guard of the decline. If all stocks moved together with unvarying regularity, the policy of jumping in and out of the market would have some justification. But they do not behave in that fashion. Reactions in a bull market are as likely as not to be confined largely to the weaker securities while the best ones hold ground or even advance in the face of the reaction. To sell a strong, active stock during a bull market with no evidence of business curtailment in sight is to abandon the favorable position to which the investor's foresight entitles him.

It is otherwise with securities which show that they are out of harmony with the bull movement. Some individual stocks may remain suspended and show no indication either of going along with the upswing or of declining. There will be some stocks, moreover, that will decline while others are advancing. Only the veriest tyro will buy stocks for which the outlook is unfavorable. During the great bull market of 1924–26, textile shares and stocks of sugar producers in Cuba continued to sink while nearly every other security was advancing. If the investor finds himself with some stock which acts as Endicott Johnson did in 1925, neither advancing nor declining more than a few points, or if he finds himself holding stocks of companies whose business outlook indicates that they will not participate in the movement, then his best procedure is to sell and to sell at once, regardless of rallies or reactions, and to transfer his funds to stocks which have indicated that they are responsive to the general trend. Otherwise, as far as the investor is concerned, there might as well be no bull market in progress. He will be having a bear market or a stationary market of his own while nearly everybody else is participating in a bull market.

## Buying Cheap and Selling Dear—and Exceptions

Not everybody is so fortunate as to pick up stocks at the end of a bear market. There are many who either do not recognize opportunities when they are offered or do not have the means then to take advantage of them. To them the most practical question is that of how best to take advantage of a bull movement when they must enter it after it has gained headway. The natural tendency is to look for stocks which have not participated to any extent in the advance, on the theory that their turn will come next. This sort of a search is justified if regard is given to the prospect for increased earnings of the stocks which are thus laggard. But too often the tendency is to buy low priced stocks in some industry where activity is already great, or to pick up securities which are said to be on the bargain counter for no reason at all except that they sell for from $10 to $30 or $40 per share. Merely because United States Steel's production is increasing and its outlook for earnings is better is no reason in itself for buying Superior Steel or Otis Steel.

This procedure is likely to be disappointing in practice. Every industry has its leading producers and its marginal producers. During trade depressions the strongest companies may make some profit, while others can operate only at a loss. As conditions improve, the marginal producers may be able to operate at a profit—but in the meanwhile the strongest units are going to operate at a greater profit. For two reasons, attention is best directed to leaders in their industries. One is that conditions which are favorable for the marginal producer are likely to be just as favorable if not more favorable for the more efficient companies. A second reason is that it requires public demand to advance the price of any stock. Public demand is increased as the public's imagination is whetted by anticipation of profits to come. Now and then this stimulated imagination will function about stocks of small and obscure companies, but generally it is General Motors or Studebaker or Nash or Hudson about which the public romances when it envisions the possibility of a bonanza in the motor industry. It is United States Steel or Bethlehem or Republic Steel which receives the attention of the speculator when profits in the steel industry are mounting. Speak of greater prosperity for equipment companies and the average person will envision American Locomotive, Baldwin. or American Car and Foundry. He will not think so readily of Symington or New York Air Brake. This focusing of demand on various stocks singles out some as public favorites and, if that favoritism is justified by finances, earnings and outlook. the money-making opportunities are greater in such a stock even after it has advanced fifteen points than in a minor, inactive issue that has not advanced at all.

Some market operators follow as a policy the observance of a stock's behavior under different conditions. If the general market trend is upward, they will watch a stock to see if it responds readily to the general trend. If it does, they will buy it with more confidence after it has advanced five or ten points than they would have before it had moved at all. This is especially true of "chart analysts" who are able to interpret market action with reference to resistance points.

### Rallies in Bear Markets

The rank and file of the public seldom sell short, although there has been a larger amateur short interest in the past few years. This being so, the public is likely to be "long" during a bear market as well as during a bull market. This position may be due in part to the fact that many would-be speculators have become "involuntary investors", that is, they have been "hung up" with stocks which they cannot sell except at a loss.

Attempting to profit on the long side in a major bear market is a procedure somewhat as difficult as attempting to go downstairs on an escalator which is in motion. If the person is very agile, some ground may be made, but all the while the trend is against him. The staircase is constantly moving upward, and a moment's relaxation of his vigilance will result in his being carried back to the starting point.

In a bear market, the fundamental trend is downward. Normally, rallies occur, but as a rule each succeeding one falls short of reaching the high points attained on the preceding rallies. New lows are also established below former low points on the move. The chances are overwhelmingly in favor of the operator on the long side being "hung up". For this reason, operation against the trend is always unsound, whether it consists of selling short during a major bull movement or of taking the long position during a major bear movement.

## The Technical Action of the Market

Regardless of what the major trend is, at times the market may exhibit movements of minor duration which are generated entirely in the market itself. Long-range moves are determined by fundamentals, but for intermediate moves, consideration must be given to the market's own behavior—its *technical position*. Failure to take this into account may lead to premature action and this, in turn, even if it involves no losses, may mean the sacrifice of potential profits.

The market absorbs from around 500,000 shares to over 2,000,000 shares in the course of its daily transactions, depending upon the state of activity at the time. That is, every day there are people with this number of shares, in the aggregate, to sell and others willing to buy the stock that is offered. Determination of the intermediate swings depends upon the relative pressure exerted by these conflicting groups. Is the appetite of the "bulls" such as to make them take all the stock that is offered quickly and to reach hungrily for more? Is the pressure to get rid of stocks so great that holders are willing (or forced) to unload them at any price? Which group is the more *anxious?* Which is the more aggressive? The very difficulty of gauging pressure of this sort is one of the difficulties inherent in short-swing trading. The best that can be done is an approximation. If a trend has been established in either direction, it is likely to prove unprofitable to take any adverse position until the market has come to a resting point. That is, the movement ought to be allowed to run its course until the averages appear to mark time and form a top or a bottom. This gives a basis for buying or selling with confidence.

The strength which develops as the market moves out of this trading zone indicates the direction of the next swing. Suppose the market has come to a stop after a decline—a temporary resting point is established. There will be weak days when the pressure to sell exceeds the pressure to buy. But if its volume does not increase and if the old low point is not broken through, there is every indication that, for the time being, progress downward has been arrested. There will also be strong days. If on these spurts the volume is very light, in all probability they mean nothing. They are merely short covering rallies. But if the advance is attended by an increasing volume of sales, there is every reason for the trader to feel confident that a rally is in the making.

These indicators cannot be used as infallible guides nor ought they to be so regarded. They can help, however, to prevent a misreading of the character of a spurt upward or of a day's weakness. Observance of the market's action in this way can prevent premature action—jumping in too soon in the course of a decline, in order to try for profits on a short-swing movement against the trend, or selling out too soon on an advance and losing some, possibly a major part, of the profits on that movement.

The behavior of individual stocks may be noted in much the same fashion. Let us say that a stock has been rather low at the inception of a bull market. It may advance fifteen or twenty points and the holder may decide at this time that he will be content with profits and sell. He will do this because he thinks that the stock has gone far enough at the time, but the chances are that he has no more tangible basis for his action than mere guesswork. To sell is to abandon his original position and it is necessary only to cite the cases of such stocks as United States Cast Iron Pipe, General Motors, General Electric and Woolworth in the 1924–1926 market to indicate that the person who did so sell would not have been able to repurchase below his selling price and would have forfeited by far the greater part of the potential gains of the entire movements.

Once a position is taken in harmony with major trends, that position ought to be maintained until one of three things happens: (1) until some change occurs in fundamentals; (2) until the market as a whole enters a trading zone and develops a top formation; or (3) until the stock itself does this.

Even if the last of these happenings occurs, the holder ought not to be too precipitate in selling. A temporary halt does not mean necessarily that the stock is going to reverse its course. It may experience only a brief reaction and then gather momentum for a further upward surge. Consequently the holder ought to wait not only for the development of such a trading zone, but to wait and observe on which side the stock is going to break out of it. It is possible that now and then this procedure will entail selling some points lower if the stock breaks out on the downward side. But the loss will be no greater than if the owner of the stock had sold prematurely on the upward side, and he will have given himself every opportunity to participate to the fullest extent in the movement. The same considerations apply to the maintenance of a position when it has been taken on the downward side.

# CHAPTER VII

## CHARTING THE TECHNICAL POSITION

From 1908 to 1914 the stock market had a general trend with reference to the condition of the banks, especially the banks of New York and London. Under the pre-war banking system, stock market manipulators quickly ran to cover when there were signs of tight money in both London and New York. Some stocks might remain fairly steady but most of them declined below intrinsic value. That paved the way for a general trend upward and most stocks followed the general trend—some more than others, but the general trend was something which the average investor could depend upon in his quest for profits.

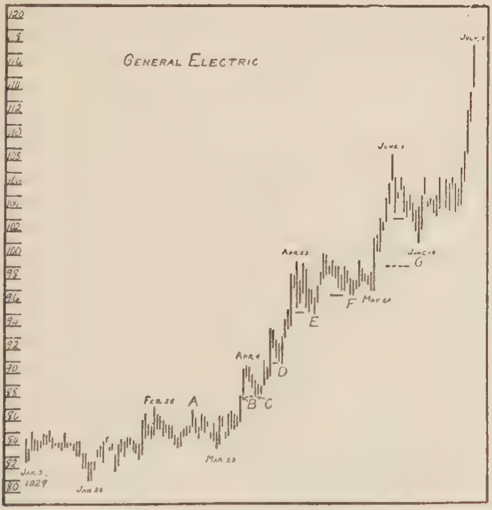
Probably there will always be a general trend in the stock market. In recent years, however, it has not been necessary to observe conditions in the London money market; it has not been necessary to give much attention to the condition of bank reserves in New York. Bankers can accommodate stock market manipulators with credit by rediscounting at the federal reserve banks. *Under present conditions, it is usually possible for manipulators to advance the prices of individual stocks whose earnings are stead-*

*ily increasing even if the general trend is downward,* which suggests that it may prove profitable to study charts of individual price movements to supplement the study of changes in the stock market averages.

A study of several dozen stocks over a period of years reveals that individual shares give signals of an upward trend, signals of a reversal of the trend and signals that the downward move has stopped. These signals are more dependable in active stocks in which the public are trading on a large scale than in case of the inactive stocks. Sometimes an inactive stock will not be quoted more than three or four days a week and then will suddenly move eight or ten points without warning. In such inactive stocks, it is better to study monthly range charts (showing the high and low for the month over a period of several years), than to study the daily ranges, or it may be necessary to depend entirely upon a careful analysis of earnings and financial condition. Once a bull campaign in an inactive stock has begun, however, a chart of the daily movement may become more profitable. What we have to say about chart signals, however, relates more to the stocks which are traded in actively.

## A Study of General Electric

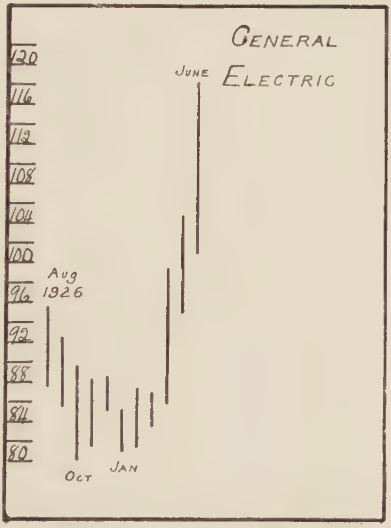
In March, 1927, General Electric showed a sidewise movement—a period of congestion with short fluctuations and no definite trend. The problem was to learn from watching a daily chart whether the next move would be downward or upward. A decline below 81 would suggest a spell of weakness. An advance above 87 would indicate the beginning of an upward trend. General Electric had remained in a sidewise or "congestion" period while Steel Common and General Motors had advanced rapidly, but on April 2 (see "B" in chart) the stock closed above 86⅞ (see "A" in chart), the previous resistance point. The fact that it closed above this previous resistance point suggested a bull movement, and this signal was confirmed during the next two days when the stock continued to advance.



Note the advance. It is a normal expectation that brief reactions will occur during an upward movement. It is possible for these intermediate reactions to equal half the preceding upward wave without impairing the bullish position of the stock. For instance, a stock may advance 6 points and react 3 points; then advance 8 points and react 4 points; and then rise 5 points and drop 2½ points—and all the while remain in a strong position. *The phrase "strong position" means that there has been no reversal of the upward trend.* During April and May General Electric experienced four technical reactions. Between April 25 and May 25 there was a sidewise movement which suggested that a top might be forming, but there was no occasion to sell so long as the stock remained above the calculated resistance point (indicated by horizontal line). *So long as the stock did not actually decline below a resistance point, there was no definite indication of a reversal of the trend.* On the contrary, when the stock closed above 100 on May 25, a resumption of the upward trend was definitely indicated. The stock reached 146⅝ on September 7.

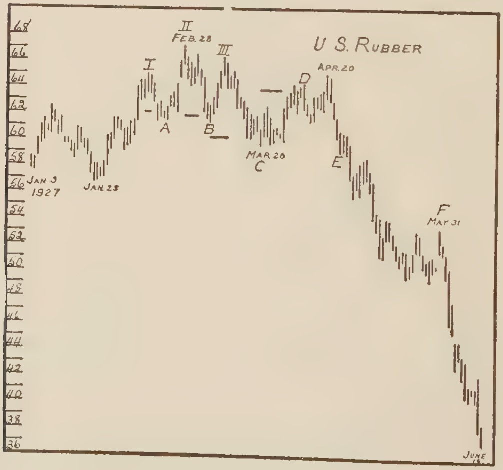
In addition to considering the immediate fluctuations, it is imperative to survey the general position. Has the stock been selling at a relatively low level for several months? If so, the signal of an upward move will have greater significance. On the other hand, if the stock has been selling at a relatively high level for months, there is less confidence in following the signal of an upward move. It may not mark the beginning of a new bull campaign but merely represent a sharp thrust against a stubborn short interest. In case of General Electric, the monthly range chart shows a strong general position in April, 1927. The accompanying diagram shows that General Electric had undergone a decline beginning in August, 1926, and had been accumulated between October and the following March. The length of time consumed in this accumulation period was a strong argument in favor of a prolonged advance.

## Formation of a Top



There is no reason why ten different stocks should show the same formation at the culmination of a bull movement. Something is likely to happen in any one stock to cause the beginning of a bear movement before it has completed a normal top. Moreover, it may be found that one stock has completed a top in January, another in February and a third in March, so that with reference to the trend of the general market, it would be surprising if all the individual tops were the same in *shape*. A serious break in the market in the month of March might find a pool unprepared for a general reversal of trend—the top in their stock would probably become abnormal. On the other hand, a stock which had been distributed in February would enter the bearish period after having completed a normal top. Such differences are always in evidence.

A study of several dozen different charts, however, will reveal certain top formations, each of which is repeated in a number of different stocks. One of these is the "head and shoulders" formation. Take the case of U. S. Rubber in February and March, 1927. The *left shoulder* was formed in the middle of February, the *head* at the end of the month, and the *right shoulder* the second week of March. This head and shoulders formation is shown in the accompanying diagram.



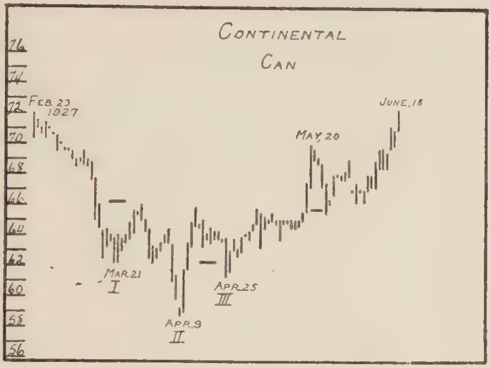
The action of this stock in March was quite different from the action of General Electric to which we have referred above. In March, 1927, General Electric was in a position favoring an advance. U. S. Rubber was still in a strong position at "A". At this point there was no indication that the previous rally was the beginning of a top. At "B", however, where the price fell under "A", came an indication that a top was beginning to develop. This indication at "B" was not a final signal. It had to be confirmed later. It was still possible at "B" that the decline might continue down to 57, in which case the next rally would probably have reached new high prices. But the sudden stop at "B" and the brief rally which followed argued that the upward trend had been reversed and that a top was forming. At "C" the previous suggestion that a top was in process of forming was confirmed when the price dropped below "B". The later advance to "D" was merely a normal rally—a rally which would logically be temporary after "C" had reversed "B". At "E" there was a further confirmation of a downward trend when the price fell below "C". After this development immediate rallies could be only temporary and purchases were not justified until a bottom formation appeared.

Sometimes the lowest prices are available before a bottom formation has been completed. While waiting for definite evidence of a turn upward, the investor misses a chance to buy at the lowest prices.

On the other hand, if a bottom has not been definitely formed, there is danger of buying too soon and suffering a further decline of 10 points or more. For instance, on May 31, at "F", there was strength which might have encouraged buying. However, the time element must be considered. On May 31 not enough time had been consumed to indicate a good bottom.

## Formation of a Bottom

The "head and shoulders" formation at the top of the move in U. S. Rubber is sometimes inverted at the bottom of a movement. The following head and shoulders bottom in Continental Can during March and April, 1927, is a fairly good example. The left shoulder (I) appeared on March 21, the head (II) on April 9, and the right shoulder (III) on April 25. This formation was defective in one respect, namely, the rally after April 9 should have gone higher than the rally immediately following March 21. It did not. It was necessary to consider other factors in deciding that a bottom formation was developing. One of these other factors was the good financial condition and intrinsic worth of Continental Can. Another was that the rally after April 9 came within 3/8 of a point of exceeding the previous rally. That was so near requirements as to be fairly convincing. Another factor suggesting that the trend was turning upward was the way the stock rallied after April 25.



## Intermediate Tops and Bottoms

The most difficult tops and bottoms to judge are those coming after an initial move is exhausted and a new top or bottom must be formed at an intermediate stage before the original movement is resumed. After a stock advances 20, 30 or 40 points a sharp break will develop. Then comes a series of rallies and reactions. Does this indicate that the movement is completed and that the stock should be sold in expectation of a bear movement? Or do these rallies and reactions represent merely a resting place in the general advance—a take-off for a new bull movement? An experienced speculator can sometimes interpret an intermediate bottom formation and take advantage of the secondary bull movement which reaches new high territory. It is not possible, however, to lay down fixed rules which will govern a majority of the cases. If it were, the art of speculation would become merely a science of investment. In any event, an attempt to act on the interpretation of intermediate bottoms during a bull movement or intermediate tops during a declining movement, should be supported by a thorough study of the intrinsic worth of a stock and a good understanding of the general trend of the stock market.

Illustrations of intermediate bottoms, formed after the first bull movement was followed by a break, are found in the accompanying graphs of Baldwin Locomotive and Houston Oil. The chart of General Asphalt shows how an intermediate zone turned out to be a top formation preparatory to a further decline.

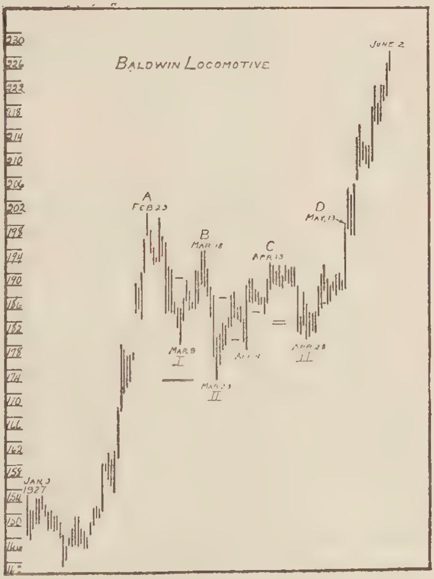
### Baldwin Locomotive—An Intermediate "Head and Shoulders" Bottom

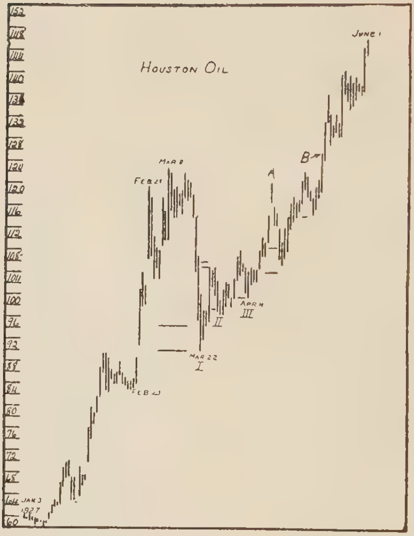
Baldwin advanced from 143 in January, 1927, to 201⅞ on February 23. The first sharp reaction lasted a month and carried the price down to 174 on March 23. At first it appeared that a *descending top* was forming, indicated at A, B and C. Presently it appeared that a head and shoulders bottom might be forming at I, II and III. The investor was not justified in arriving at any conclusion as to the next move until the stock definitely declared itself. If it declined and closed below III (April

28 price) weakness would be indicated. If it advanced and closed above C (April 13 price), resumption of the advance would be indicated. The stock finally declared itself on May 13 when it closed above C, confirming the head and shoulders bottom formation. The stock then rose to 265¼ on September **7.** During these wild fluctuations in Baldwin, the action was surprisingly regular in the sense that reactions and rallies recognized the calculated resistance points indicated by the horizontal lines in the chart.

### Houston Oil—An Intermediate "Ascending" Bottom

Houston rose from 60⅛ in January, 1927, to 124¾ on March 8. A sharp reaction developed before a top had been formed carrying the stock down from 124¾ to 92. The fact that a good top had not been formed indicated that there would be a good rally after this reaction which would carry the stock from 92 back near the previous high. Would





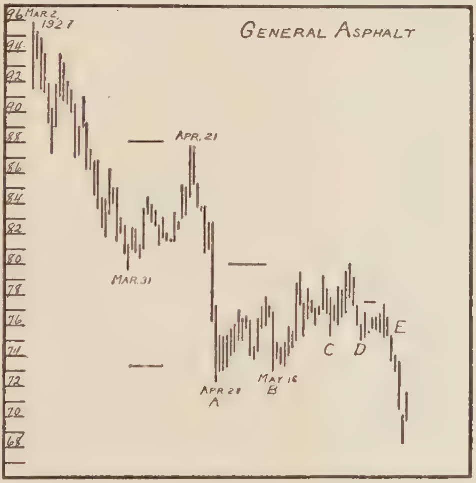
the stock then form a top, or would an intermediate bottom develop which would support a new bull movement? What developed was an *ascending bottom* indicated at I, II and III. It was still possible that a top would form around 122–125, but the reactions during the intermediate stage at no time indicated a reversal of the trend. The stock declared itself on May 12 when at B it closed above A, the previous top, thereby confirming the indicated ascending bottom formation. The advance continued without indications of reversal to 174½ on July 9.

## General Asphalt—An Intermediate Top

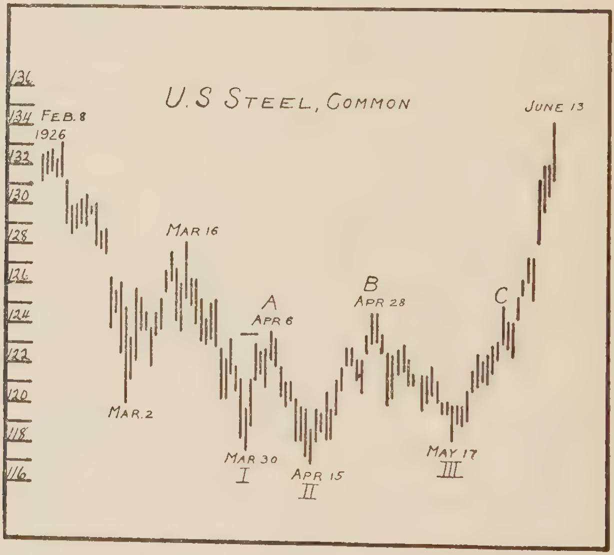
General Asphalt declined from 96 in March, 1927, to 72¼ on April 28. Would the stock then form a bottom and resume the bull movement? An ascending bottom was suggested, somewhat feebly, at A, B and C. However, at D this suggestion was reversed when D sold under C. After the signal of reversal came, there was a temporary rally of six days before the decline set in, thus giving a week in which to sell after the stock had indicated a downward trend. In this case, however, the indications were not very convincing until the stock definitely declared itself at E—that is, there was no characteristic top formation such as the head and shoulders top, or the declining top. The intermediate stage was featured merely by what might be called a "struggling" rally.

## Steel Common—A Broad Bottom

A drastic decline must be followed by a broad bottom, if one is to have confidence in the next upward move. A sharp decline followed by a sharp rally does not lead into a bull movement. For instance, in the following diagram of U. S. Steel Common, the price declined from 133 in February, 1926, to 120 on March 2. Without waiting to form a good bottom, the stock rallied 8 points in two weeks, reaching 128 on March 16. Then the stock quickly declined 10 points in two weeks and proceeded to form



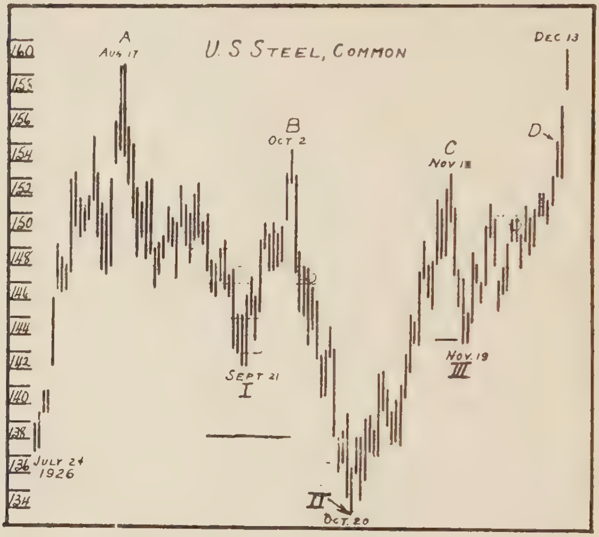
a head and shoulders bottom, as indicated at I, II and III in the diagram. The rally from March 30 to April 6 completed the left shoulder; the rally from April 15 to April 28 completed the head; and the rally from May 17 to May 29 completed the right shoulder. When B sold above A, the formation of a bottom was indicated. This was confirmed when C sold above B. Such a broad bottom, formed over a period of two months, indicated that the next advance would be well sustained.



Steel Common—An Intermediate Bottom

After completing the bottom made in April and May, 1926, discussed above, Steel Common began discounting the long-awaited stock dividend with a powerful advance. The price rose from 118¼ on May 17, 1926, to 159½ on August 17. The stock then declined for two months, losing slightly over half the preceding advance by October 20. Would it resume the bull movement? From the standpoint of studying market action, the chief favorable point was that *the decline had occurred before a good top was formed in August.* This suggested that the decline from August 17 to October 20 was an intermediate move during a long advance, and that the final top formation would not develop until after a good recovery. What actually developed was very similar to the intermediate bottom in Baldwin described on page 139. There were two possible formations developing simultaneously. At C there was the suggestion of a "descending top", as indicated by A, B and C. But I and II suggested the possibility of a "head and shoulders" bottom, provided an early sharp reaction came after C to form a right shoulder. It came at III, and the rally after November 19 completed the formation of the right shoulder. The stock did not declare itself definitely, however, until at D it rose above C at a price level of 153½. The upward movement was then resumed in a manner which assured that it would be sustained for several months until a broad top was formed. The advance continued to 176 on May 31, 1927, the old Steel Common's last day on the Stock Exchange.

Obviously, it would have been better to sell Steel Common around 155 in August and repurchase in

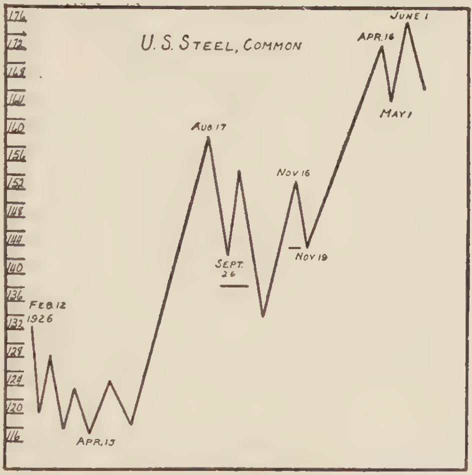


October than to hold for the long pull. The chief objection to this policy is that the investor might have failed to repurchase in October and would have entirely lost the benefit of the 40 point advance between October 20 and May 31. Possibly a compromise policy should be adopted in such cases. In order to avoid the unpleasant experience of the 25 point decline after August 17, the investor might have sold part of his holdings near the peak in August and held the balance for the long pull.

This question of speculative policy can be studied better by a chart covering the whole period, showing the bottom completed in May, 1926, and the intermediate bottom formed in October and November, together with the subsequent advance culminating in June, 1927. (See chart below.)

## The Value of Chart Reading

Mr. John Doe may ask, What will Steel common do next week? This question can be answered with some assurance in case the stock has definitely declared itself. As pointed out above, however, there were several weeks of uncertainty in October, 1926, before Steel Common definitely indicated a resumption of the advance. An advisory service is not justified in publishing a definite opinion during such a period of uncertainty. The most it can do honestly is to discuss the pros and cons so that the investor will be able to detect the next move after the stock has declared itself. It is a mistake to think that a definite opinion is always possible through chart reading. Chart reading merely helps to eliminate uncertainty part of the time. That is worth while. It justifies studying the technical



position by means of daily and monthly range charts. Moreover, the alternative is to guess blindly all the time in case of the stocks of companies which do not publish frequent earnings statements or whose financial reports conceal more than they reveal. In the latter cases, market action is the only tangible evidence available regarding the trend of the stock.

# CHAPTER VIII

## ANALYSIS OF INDIVIDUAL STOCKS

Correctly estimating the trend of the market will enable the investor or the speculator to do one very important thing—to make his purchases when the market as a whole is relatively low and when the trend promises an improvement, and to sell within a reasonable distance of the top on the ensuing movement. If all companies in each line of industry were of equal strength, attention to only this phase of the problem would be necessary. We know, however, that in no field of industry or business are different companies of uniform financial strength or uniform earning power. Atchison, Topeka and Santa Fe and the Chicago and Alton are both railroads, but the similarity between them as mediums for investment practically ends there. Anaconda and Miami both produce and sell copper, but there is a vast difference in the relative profitableness of these companies' operations.

Determination of the time to purchase, then, is only a beginning step. The determination of what to purchase is of exactly as much importance. Handling funds in the market has become a more scientific affair with the wider diffusion of knowledge about stock market cycles. But for the purpose of making money in the security market, there can be no substitute for the selection of sound stocks. It will make not the slightest difference to a man if the greatest bull market in history is in progress, if he is holding the stocks of companies which are not sharing in prosperity and whose stocks are not responding to the upward surge. In one way this study of the security itself may be rated as even more important than a study of the cycle. A security of the type of United States Steel or General Electric, even though bought at the wrong time, that is at peak prices, may be depended upon with fair certainty to show a profit in time—patience being the chief requisite. But the stock of a company which is in a failing industry, or which is losing ground in its industry may be headed for nowhere except receivership, no matter at what stage of the cycle it is bought. Here all the patience in the world will merely result in loss. It is the purpose in this chapter to outline some of the primary factors to be considered before good dollars, which probably represent considerable work on the part of their owners, are placed in common stocks.

## Stocks Correlated with Commodity Prices

Stocks of companies in the extractive industries are present in various groups and numbers on the New York Stock Exchange. Some of these groups, oil stocks in particular, nearly always have a speculative following. In other groups, such as copper, lead, sulphur and so forth, the stocks may be relatively laggard until some development within the industry, promising exceptional profits, brings them into popular favor. This development in the industry is usually an increasing price for the commodity that is produced; and, for these primary producers, consideration should start with the outlook for the price of the commodity.

The company engaged in primary production has comparatively little control over the price that its product commands in the market. No amount of attempted regulation of oil prices can keep the price of oil from weakening, if the discovery of some great new source of supply brings greatly increased quantities upon the market. No influence can elevate and maintain the price of copper except a consistent demand large enough to absorb the present production and to take up increased production for a time.

Speculation in securities of this class is inseparably connected with the outlook in the commodity markets, always remembering it is necessary to take into account the trend of the market and the influence of interest rates, which are considered later.

## Factors Bearing on the Price of the Commodity

The price of a commodity will be determined by the interrelation of the demand for it and its supply. The supply consists of the current production of the industry as a whole and of the stocks of the commodity which have been accumulated, or are being accumulated, augmenting current production. Statistics bearing upon the two elements of supply will be obtainable and be capable of measurement. Thus gains or declines in oil production and the state of oil in storage may be learned readily in reviews of the condition of that industry, and the same thing applies to copper and to other fields of primary production. Demand cannot be so reduced to measurement. Estimates must be relied upon, but these estimates can be based upon tangible reasons. Thus, if increased activity in building, in the motor trades, in the electric industry, and so forth, is anticipated, there is warrant for considering that the domestic demand for copper will at least hold firm and, possibly, increase. The foreign demand, reflected by exports, is another important element. The flexibility of demand for some primary products makes it impossible to take supply figures alone and to state with certainty that steady gains in supply alone must exert an adverse influence upon price. Gasoline is one instance of a commodity with a very elastic demand.

## Position of the Company in the Industry

Summarizing briefly the factors bearing upon the price of the commodity, we know that a demand which keeps absorbing current production and eating into accumulated supplies is making for higher prices, while a demand which is declining and necessitating the storage of part of current production is a factor making for lower prices. If the price of copper rises, will all companies benefit alike? They would benefit alike if each company had ore deposits of equal grade, capable of being worked at a uniform cost. But copper companies are not so situated nor are companies in any other line of primary production. Attention must be given to the amount of the reserves which each company has, the quality of the material it produces and the cost of getting that material out and to the market.

In every activity of man where the soil is made to yield useful things, the highest grades of the commodity, or the most fertile soils, are the ones which are first worked. Every extractive industry is constantly depleting its assets. Agricultural lands and forests are capable of being maintained as productive agencies. But the mine or the oil well cannot be cultivated.

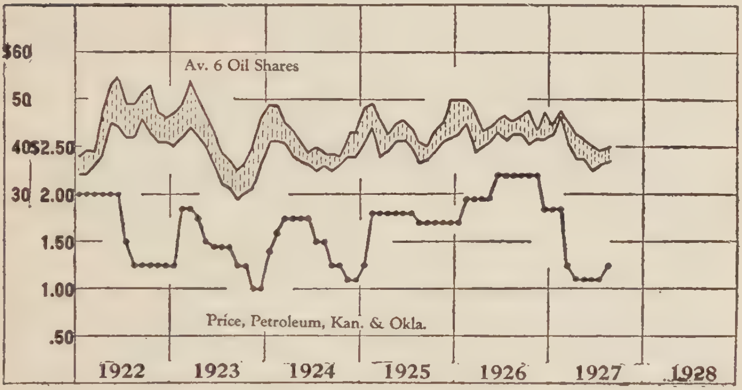
In 1925 Mother Lode Coalition produced copper at an average cost of 7.25 cents per pound. Kennecott in its Utah, South American and Alaskan properties produced copper at a cost of 8.07 cents per pound. During this same year it cost Ray Consolidated and Chino 11.5 cents for each pound of copper produced. Intermediate between these high and low cost producers were Chile, with a cost per pound of 8.369 cents; Utah, with a cost per pound of 8.43

cents; Nevada, with a cost of 10.39 cents, and Granby, with a cost of 10.5 cents.

The price of copper obviously could decline to 11 cents and still enable Chile, Kennecott and other low cost producers to operate at a profit, while the porphyry properties with the higher costs would be losing 1.5 cents on each pound produced. As the price of the metal advances properties which could not be operated profitably with copper at a lower figure will begin to produce. This coming into the market of the marginal mines is a factor tending to check any runaway market for the red metal, except in times of extraordinary demand. Then the point ought to be sufficiently clear that with the price of copper at, say, 14 cents there is no particular reason for buying the stock of a company which may produce at a cost of, say, 12 cents. It would take only a relatively small decline to make its operation unprofitable, while the 7 cent and 8 cent producers could still operate at a good rate of profit.

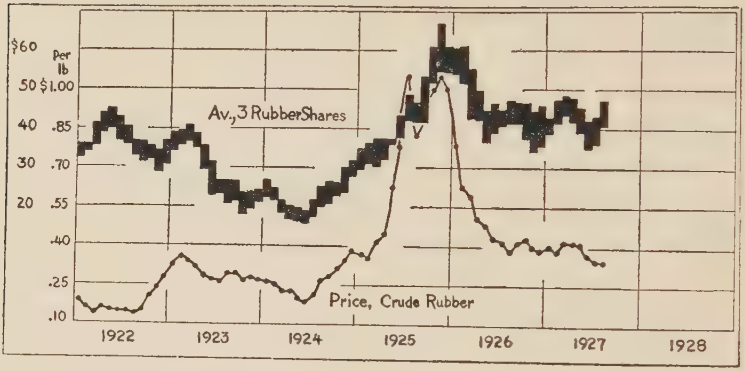
## Oil Stocks

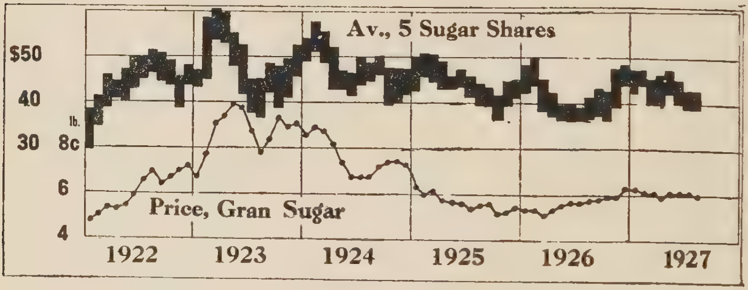
The correlation of the prices of stocks of oil producing companies and of the commodity is indicated in the accompanying chart. Current production and the supplies on hand are capable of ready measurement. With the individual company in this industry the question is not only that of cost, but that of reserves and their quality. In considering the earnings of petroleum producing companies, attention ought to be given to whether these earnings represent profits from flush production in new fields, which may be merely a temporary development, or whether the company's properties are such as to insure continuing high grade production.



As with copper and oil stocks, it will be found that prices of the stocks of tire and rubber, sugar, lead and zinc companies likewise change largely in response to changes in the price of the commodities produced or used largely in manufacture.

These changes are reflected in the same way—the low cost producing companies feeling the effect of improvement before any influence may be noticeable in the case of the marginal producers.





## Gold Mining Stocks

Gold, being the standard of value, is a commodity whose market price always remains the same. The purchasing power of gold, over other commodities, may change but this has no relation at all to its market or mint price. Hence, there is but one variable affecting profits in this industry—that is cost of production. Advancing commodity prices and wages make gold mining unprofitable, for the price of the metal cannot rise to take care of the increased cost of doing business.

## Stocks Influenced by Single Industries

Somewhat related to the class of stocks which respond closely to changes in the price of basic raw materials, are stocks which are almost entirely dependent upon the prosperity of some particular industry. Manufacturers of agricultural implements will not do well if farm purchasing power is low, although most manufacturing companies may be enjoying good business. In like manner, the prosperity of the fertilizer industry is closely linked with farm conditions; and that of the equipment industry, or at least that part of it which is engaged in car and locomotive building, will have its fortunes intertwined with the railroads. Nor will it be possible to forecast increasing business for such equipment companies simply because railroad profits are increasing. The condition of the road's equipment and its efficiency is the determining factor.

It may be said in general with regard to stocks of this variety that the purchaser ought to be quite conversant with the industry on whose prosperity the value of the stock depends. A superficial acquaintance with conditions is hardly enough. Buyers of such equipment stocks as Baldwin, American Locomotive, Lima Locomotive and New York Air Brake, during the years 1924 and 1925, when railroad earnings were mounting higher, would have had a disappointing time of it.

The prosperity of any manufacturing company is related more or less closely to the state of activity in lines which consume its product. But, for the purpose of speculation, it is better as a rule to select stocks which do not depend entirely upon one industry, unless there is more than average certainty that conditions in this industry are pointing definitely toward larger profits and hence toward more business for the companies which will benefit by these increased profits.

## Financial Analysis—Book Value

Turning now to the financial statements of individual companies, there are two sources to which the investor may look for information that will help him to arrive at a decision regarding the attractiveness of a given security. The balance sheet will inform him how the company is situated financially, what its capital structure is, whether it has been reducing loans or increasing them, whether it has been disposing of its product, or has had inventories accumulating on its hands. The income reports will throw light upon the profitableness or unprofitableness of the company's business.

With some securities, such as bank stocks, book value (the net assets applicable to the stock per share) is an item that usually receives attention. There is a relationship between the book values of bank stocks and their market prices. But the man who tries to establish any such relationship between the book values of industrial and railroad shares and their prices will be disappointed. For all intents and purposes, this figure may be disregarded.

Book value as it stands in the balance sheet is not the amount which would be realized by the stockholder in case the corporation were dissolved, for it is seldom that corporate assets bring at a sale the figure at which they are carried. The book value is the equity of the stockholder in a going concern. That equity is naturally worth much more than his equity in a liquidating concern. And, since the investor does not buy shares in companies which he thinks are going to liquidate or go out of business, but endeavors rather to place his funds in companies which are going to grow, he may well be content with noting simply whether his equity is above or below the market price of the stock and resting with the knowledge that if the equity is below the market value, the risk of purchases is naturally thereby increased.

### Working Capital

The "liquid" condition of a corporation is important for the same reason that the state of an individual's bank account is important. The individual's credit is estimated by the tradesman in accordance with the promptness with which he pays his bills. As far as the people who sell to him are concerned, a man with a relatively small but regular income who has ready cash available each month to meet his obligations is a better customer than a man who may be considerably wealthier, but whose income is irregular, who frequently has to postpone meeting his bills and who is generally short of cash. Every business is a going concern. Every business needs a certain amount of ready funds for the ordinary conduct of its affairs and to meet the bills that are coming in from month to month. When a company cannot meet its current obligations, it is considered insolvent. This use of the term insolvency has nothing to do with the relation of its total assets to its total liabilities. Its property may be worth many times the total of all its obligations to creditors but it is insolvent if it cannot pay its bills in due course.

Working capital is the excess of a corporation's current assets over its current liabilities. Under current assets, we include all items which may be turned readily into cash. Thus, accounts and notes receivable and inventories fall under the head of current assets. The rule is sometimes stated that current assets should be at least double current liabilities. But this is only a very broad generalization, and exceptions to the rule are perhaps more numerous than the number of cases that fall within it.

The ratio of current assets to liabilities should increase in accordance with the risk inherent in the business. For a manufacturing or trading company, a higher ratio is desirable. The less stable the industry in which the company is engaged, the wider the margin ought to be, for the chance of its being embarrassed because of seasonal or cyclical fluctuations in business is considerable. On the other hand, a company in a stable field of operation, such as a public utility company or a railroad, may be perfectly safe with a ratio of less than 2 to 1. Its receipts are subject to less fluctuation and its obligations capable of a more exact estimate. Its debts will likely consist of bonds instead of bank loans.

It will not be sufficient to stop merely with the ratio of current assets to current liabilities. It may be that a manufacturing or trading company will show a high ratio, but the greater part of current assets will consist of inventories. A large inventory account will be favorable if prices of the materials used by the corporation are low and there is the likelihood of a general advance. But a large inventory may be a source of embarrassment if not of actual disaster in the case of price declines. The corporation is then in the position of finding its products less salable and of having its chief item of current assets become steadily depreciated by the price decline. What the corporation needs in a case such as this is cash, whereas it has large stocks of goods that are becoming steadily more difficult to exchange for cash. A broad general rule, useful again as a yardstick, but not to be taken as an absolute standard, is that an industrial corporation's cash ought to equal at least 25 per cent of all its current liabilities.

One further observation may be made with regard to working capital. In the public utility field, particularly, groups of related companies are found with a number of holding companies in the chain. When a close relationship exists, the ratio of current assets to liabilities, in the case of the parent company, may be largely disregarded—at all events, it need not be taken as the last word. For reasons best known to the management, current assets and liabilities of a holding company may just about balance or may even show a deficit. This is unimportant for the reason that recourse may be had readily to the subsidiary companies in case of need. A consolidated statement, however, reflecting all companies combined, should show a sound liquid condition.

In order to gain an adequate perspective of the company's liquid position, comparison of the latest balance sheet with those of other periods is almost necessary. By this alone can it be determined whether its inventories are piling up or are being kept at what appears to be a normal figure; whether bank loans are abnormal or not and whether the company is improving its liquid position or whether there are indications that it is becoming less favorably situated to meet current demands upon its treasury. In cases where bank loans have mounted steadily, it may be well to consider these as additions to funded debt, for there is a strong likelihood that the corporation will fund these obligations by longer-term borrowing, *if its credit permits.*

## Risks of the Business

The nature of a company's business has a direct effect upon the price of its securities. Stating the principle quite broadly, it is true that the prices of stocks of companies whose business is subject to slight fluctuation will be steadier than those of companies in lines where business changes materially from year to year. Conversely, there is at times greater opportunity for profits in stocks of the latter variety. It requires no more than mere reference to the fact that public utilities and railroads, which have a constant demand for their services, are in a much more stable line of business than manufacturing companies.

But among the industrial companies are likewise to be found degrees of business stability. Year in and year out, there is a demand for steel in a multitude of forms, a demand which fluctuates with business prosperity and readjustment, but which is not influenced by changes in style, changes in public taste or any other element of caprice. Year in and year out, there is a demand for electrical equipment. Here, the form of the demand may change somewhat more than that of the demand for steel, but none the less, it is relatively constant.

The electrical manufacturing companies are rather in the position of creators of demand than of being influenced by it, for the production and efficient marketing of such developments as the electric iron, electric heaters, the radio, etc., are largely instrumental in holding up the business. The demand does not arise from any desire of the public for these things until they have been called to its attention.

Farmers use agricultural machinery and fertilizers constantly, but their ability to buy is closely connected with prosperity on the farm. The holder of stocks of this sort is, in some measure, assuming risks incidental to the business of agriculture as well as the risks involved in manufacturing.

Illustrative of companies which are subject to considerable risk by reason of changing demand are corporations which manufacture articles not strictly necessities and which will therefore be bought well during periods when public spending is free and will experience curtailed buying in periods when the public is holding its purse strings closely. Manufacturers of automobiles have to contend with the vagaries of the public's taste. A decade ago the closed car was regarded as suitable for elderly gentlemen, but hardly a vehicle adapted to the needs of the younger generation. In 1925 some companies were found concentrating upon the production of closed cars. More volatile still is the vogue for "smartness" in appearance. Manufacturers compete to introduce features which add to the car's attractiveness.

Early in this century the substantial man of affairs was a cigar smoker. The cigarette was the pariah of the tobacco industry. But the vast and continuing increase in the public's use of cigarettes and its preference for them instead of cigars served to build up steadily the earnings of companies concentrating upon cigarette manufacture, while for many years cigar makers experienced relatively hard sledding.

The bicycle, almost a necessity in the '90's, passed out of vogue in a decade—and with it the American Bicycle Company. Introduction of a semisoft collar for men creates an entirely new demand and cuts into the demand for starched collars and for the old soft variety. Manufacturers of fire-arms and ammunition go into the sporting goods business and the cash register business in order to supplement the demand for their line. Every merchant who has handled any article of clothing, or any person who has been engaged in its manufacture, knows the vicissitudes of business due to shifts in the popular taste. All of these risks are appraised and taken into account and reflected in the price of industrial stocks.

## Risks Within the Industry

Not only are some industries much more subject to risk than others, but the same thing applies to companies within a given industry. In practically every line can be found premier companies, the leaders in that field. There are other companies ranging down to marginal producers. If the principal companies are active and alert, they will continue to hold their primacy. If they are not, they may be outstripped by competitors. But as a rule, industrial leaders are fairly well entrenched. In the table below two companies have been taken from each of three different industries. In each of these lines one company has an unquestioned leadership, while the other selection is that of a less important unit in the industry. Earnings are given in dollars per share for a period of seven years. The purpose of the table is not to show comparative earning power, for of course to determine that we would have to take capitalization into account. The purpose is rather to indicate the relative stability of earnings of the primary producers over the earnings of the secondary producers.

Comparative Earnings per Share of Selected Companies in Three Industries

Airbrake Manufacturers

| Year | A | B |
|---|---|---|
| 1926 | $13.28 | $5.10 |
| 1925 | 8.78 | 4.29 |
| 1924 | 7.71 | 4.13 |
| 1923 | 14.11 | 8.42 |
| 1922 | 11.94 | 2.79 |
| 1921 | 1.21 | ... |
| 1920 | 9.15 | 7.52 |
| 1919 | 10.80 | 6.24 |

Comparative Earnings per Share—*Continued*

Sulphur Producers

| Year | A | B |
|---|---|---|
| 1926 | $14.76 | $2.48 |
| 1925 | 8.96 | 1.03 |
| 1924 | 7.58 | ... |
| 1923 | 7.46 | 1.06 |
| 1922 | 6.07 | ... |
| 1921 | 3.07 | ... |
| 1920 | 5.24 | ... |
| 1919 | 1.52 | 1.25 |

Steel Manufacturers

| Year | A | B |
|---|---|---|
| 1926 | $17.99 | $2.03 |
| 1925 | 12.86 | 1.06 |
| 1924 | 11.77 | ... |
| 1923 | 16.42 | 1.00 |
| 1922 | 2.84 | ... |
| 1921 | 2.24 | ... |
| 1920 | 16.62 | 1.48 |
| 1919 | 10.14 | 1.92 |

These comparisons are but representative of those in every line. Yet there is never a period of the year, whether bull market or bear market, that speculators and some people who call themselves investors do not become greatly interested in the stock of some small, relatively minor company in a flourishing industry, wholly overlooking the fact that conditions favorable to the small or marginal producer are still more favorable to the leading unit. The relative position of the company in the industry is another element reflected in the price.

## Financial Structure

By financial structure as an element affecting risk is meant the proportion of borrowed and owned capital with which the company does business. Borrowed capital comes from investors, the trade, and the banks; owned capital is supplied by shareholders of all classes. Some classes of shareholders receive a preference, in the way of dividends, however, over other stockholders. It is a matter of simple arithmetic to demonstrate that if a company's fixed charges —its obligation to pay interest to borrowers—are high, then a contraction in business of any proportion will leave nothing available for dividends to the owners. A company's capital structure must be considered with reference to the business it carries on. The public utility and railroad corporations with a relatively slight fluctuation in their businesses can carry on effectively with a proportion of borrowed capital that would be fatal in many lines of industry. The presence of bonded indebtedness in the statement of a corporation such as the United States Steel Corporation is not a matter for concern if the proportion of bonds is not unwieldy. But a mercantile house with a heavy mortgage debt might often be in danger of insolvency.

Swift & Company paid dividends on its common stock for the seven-year period from 1919 to 1925 at the rate of 8 per cent, without interruption. Armour & Company in the same industry paid dividends of 2 per cent in 1919 and 1920 on its old common stock and 4 per cent on the new "A" stock in 1921. For the next three years, no dividends were paid. Then 8 per cent was paid in 1925, followed by the passing of the dividend again in 1926. Without entering at all into the many other considerations besides capital structure which affect the companies compared, there will be evident from a mere résumé of the capital structure, the relative security of Swift stock as compared with the Armour issues and the relatively greater certainty that dividends can be maintained through the vicissitudes to which the packing industry is subject.

Armour & Company shows a funded debt of approximately $140,000,000, while preferred stocks of the Illinois and Delaware companies total approximately $130,000,000. Here we have $270,000,000 of bonds and preferred stocks on which interest and dividends must be paid before anything can be carried to surplus for dividends on the $100,000,000 of common. Of Armour's capitalization approximately 38 per cent consists of bonds and 35 per cent of preferred stock. Common stock amounts to slightly over one-quarter of the entire capitalization.

On the other hand, we find Swift & Company with $75,000,000 of bonds, no preferred stock and

$150,000,000 of common stock. Here the funded debt amounts to but one-third of the total capitalization and there is no preferred issue intervening between dividends on the equity shares and the interest due to bondholders. Risk due to capital structure is another element which the price of the stock reflects.

## Ratio of Earnings to Price

The price of an industrial stock will tend, in the long run, to conform to its earnings. Speculative enthusiasm generated by the anticipation of large increases in earnings may carry the price up to a figure far in excess of that which is warranted by actual performance. *Per contra,* in a liquidating movement, the necessities of selling will often depress the price of a stock unduly. But since the reward to stockholders in the form of dividends can come only from earnings, this figure furnishes the most practical, satisfactory and generally workable yardstick. What is a normal relationship between earnings and the prices of industrial securities?

In considering this we must take into account a proper capitalization rate for earnings.

From a consideration of the risk factors mentioned above, it is obvious that one standard rate of capitalization cannot be applied to all industrials indiscriminately. Because the risk incurred by a stockholder in a new radio corporation is greater than the risk assumed by a stockholder in United States Steel, the earnings of the former must be capitalized at a higher rate. That is to say, the stockholder will look for a higher return on his investment to pay him for the risk.

A study of the relationship between earnings and stock prices for a selected group of companies for the period from 1912 to 1921, inclusive, showed the following averages for the ten-year period.

Ratio, Earnings to Price (Ten-year Average)

| | |
|---|---|
| Stocks involving low risks | 12 to 15 per cent |
| Stocks involving medium risks | 15 to 20 " " |
| Stocks involving high risks | 20 to 25 " " |
| Stocks involving very high risks | over 25 " " |

(Badger, "Valuation of Industrial Securities," page 123.)

Considering the same data more in detail, the same authority finds an average rate of capitalization for General Electric of 10.87 per cent; for American Locomotive, of 14.73 per cent; of Studebaker, 23.3 per cent; of United States Steel, 15.19 per cent; of Brown Shoe, 18.3 per cent; of American Woolen, 24.92 per cent. These ratios are the percentage of earnings per share as shown by the income account to the average price for the period. Here is in evidence, at once, the market's estimate of the relative risks between holding shares of General Electric and Studebaker. The market's estimate of the relative degree of risk between such stocks as General Electric and United States Steel and the stocks of companies more subject to changes in demand due to style and other causes is succinctly portrayed. Can these ratios be taken as affording approximate guides to the proper relationship between earnings and price?

One thing is to be noted regarding the periods which the study embraces. During the latter part of the decade under review, interest rates were rising rapidly. Taking the years 1912 and 1913, the same computation would show that earnings of General Electric averaged 9.33 per cent of its price, those of Brown Shoe 13.2 per cent, United States Steel 13.35 per cent, Studebaker 14.46 per cent and American Locomotive 21.2 per cent. In all but one case these percentages are lower than those given by the ten-year average. And they seem more in line with present post-war conditions than the ratios obtained by inclusion of the war period.

This is borne out by carrying figures for the same companies through the four years succeeding the abnormal year 1921. During these four years, earnings of General Electric averaged 8.64 per cent of its price. Earnings of United States Steel were 10.23 per cent of its price; of May Department Stores, 11.78 per cent; of Brown Shoe, 17.73 per cent; and of Studebaker, 18.7 per cent. Under present conditions, accordingly, it would appear that a lower rate of capitalization must be taken as a yardstick. Taking United States Steel as representing "normal" industrials and General Electric as representing industrials of more than average stability in earnings, it will be noted that in recent years the price of Steel has been about 10 times its earnings and the price of General Electric at somewhat over 12 times its earnings. May Department Stores, representative of another business, subject to no more than normal fluctuation for an industrial enterprise, has also maintained a ratio of price to earnings per share of approximately 10 to 1. On the other hand, such perfectly solvent industrials as Studebaker and Brown Shoe have had their stocks quoted in the market at a figure approximately equal to 5½ times earnings. This discount obviously has nothing to do with the solvency of the companies. It is rather an appraisal of the risks inherent in the shoe and motor industries as compared with the steel and electric industries and the department store business.

Taking an income return of 7 per cent as representative of a fair normal rate for a common stockholder in a stable industrial enterprise, a company which earns $10 per share on the average can well afford to maintain this rate. It will be safe if we lay down the general rule that stocks of companies which are leaders in industries subject to relatively small fluctuation in business should sell on the average at about 10 times the earnings per share.

When earnings are on the increase, this increase will frequently be overdiscounted. The price will rise to a higher ratio and in the case of some companies exceptionally strong financially, a higher ratio will probably always be maintained. Allied Chemical is a case in point of a stock of such financial strength that it sells regularly at considerably more than the 10 to 1 ratio. On the other hand, taking industries which are not as stable—where there is increased risk due to style change, change in popular favor, etc.—the price will normally be less than the 10 to 1 ratio. It has been noted that the price of Studebaker, one of the leaders in its field, has averaged only 5½ times its earnings in recent years. In the case of stocks of companies which are practically marginal producers, or stocks of companies in industries which are in a profound depression, the ratio of earnings and price will be still lower. As a rule-of-thumb method, the 10 to 1 ratio may be taken as normal for the best securities in the best industries, with allowance for higher and lower degrees of risk in other companies and in other lines. In a rising market, stocks tend to approach and pass the 10 to 1 ratio, and in a falling market to go below it.

Among the standard rails and utilities the ratio of earning to price may be only 8 or 9 per cent, that is, the price may be 11, 12 or even 15 times the earnings.

Finally, it remains to allow for concealed profits or unreported income. General Electric may figure depreciation too liberally so that reported profits will be less than the real net income. Woolworth may buy equipment for new stores and include this capital investment in current expenses, thereby reducing reported profits. Hudson Motor did this in 1926.

New York Central and Consolidated Gas may not include profits of subsidiaries in reported net income. The investor must allow for these things before computing ratios between earnings and prices.

# CHAPTER IX

## ANALYSIS OF INVESTMENT ISSUES

Bonds are generally bought for income. The bond buyer as a rule is not interested in price fluctuations. His concern is primarily for safety and for a steady, dependable income. The further qualification may be added that he wants this income as large as possible consistent with safety. This being so, the question may be raised at once whether the bond buyer is concerned with estimating the trend of prices. It may be admitted at once that he is not interested from any speculative standpoint. His interest in price is not that of the stock speculator who buys with the primary purpose of selling later at a profit or who sells with the primary purpose of buying lower at a profit. There are times, however, when it is desirable to sell bonds and buy short term notes. When indications point to a general downward movement of bond prices, including gilt-edged issues, if he does not sell, his first objective is being neglected —that of maintaining his principal intact. A considerable drop in the general market may cause as much loss as if an inferior issue had been acquired. There is also to consider the virtual loss of income through an increase in commodity prices, and the possibility that bond prices may decline for that reason.

## Bond Prices and Commodity Prices

A widow, let us say, is the recipient of an income of $10,000 from a trust fund. The corpus of the fund is invested entirely in bonds. As the recipient of this income, in 1910 she could have laid out a budget allocating so much to her shelter, so much to food and clothing and other essentials and proceeded to budget her $10,000 in accordance with her needs. At the end of ten years, or in 1920, she would have been under the necessity of revising her budget. Practically every item in it would have shown a conspicuous advance in price. She would have been under the necessity of paring away some of the less necessary items and possibly reducing her standard of living somewhat all along the line. She is receiving exactly the same dollar income, but her command over commodities has lessened materially. Since incomes are of no use whatever to people except for the command over material things which they bring, when that command is lessened, the value of the wealth which produces the income must also be lessened. Put in simpler language, when commodity prices rise, the prices of securities which pay income at a fixed rate tend to decline.

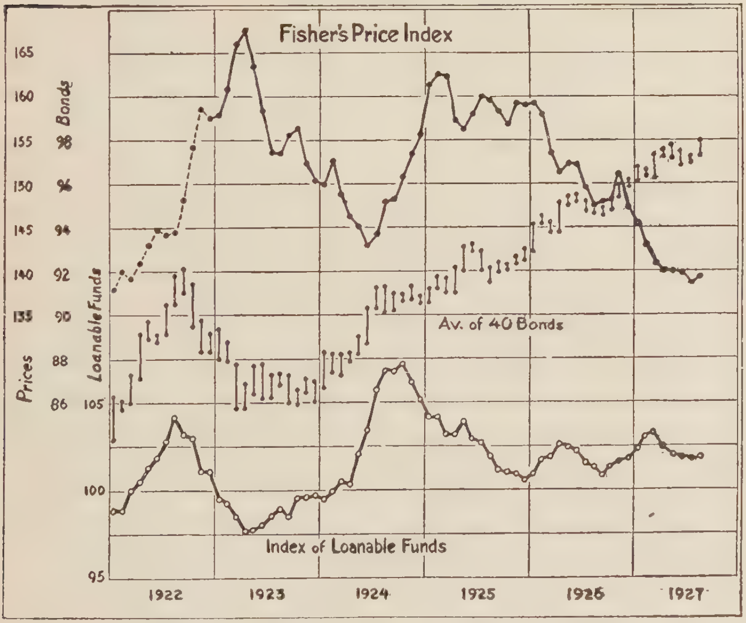
This correlation may be close or general. But no decided change in the price levels of the goods for which incomes are spent can take place without exerting a reciprocal change upon bond prices.

## Bond Prices and Interest Rates

A bond is evidence of money which has been loaned to a corporation. Every person who buys a bond, whether he buys an original issue through an underwriting house, or whether he buys one in the open market, is lending money to the corporation. His check, of course, goes to the bond house or it goes through his brokerage house to the former owner. But somewhere back in the chain of owners is the original one who took the bond off the hands of the bankers who advanced money to the corporation. Bonds, as credit instruments, are influenced accordingly by changes in the rate of interest paid by borrowers for loans of this type.

Borrowers will be able to borrow at low rates of interest when the supply of credit is large and, conversely, they will pay higher rates of interest when the supply of credit has become restricted, either through heavy borrowings which have eaten into the surplus credit available for loans or whenever a depletion of bank reserves diminishes the supply. Every material change in the prevailing interest rates for corporate borrowings affects directly or indirectly every bondholder.

An investor purchases a bond of an industrial corporation, a public utility, or a railroad at a time when the supply of capital for investment is abundant. It is so abundant that the corporation can borrow at a rate of 5 per cent. The investor pays par, or $1,000, for a bond. Now, through absorption of many issues or through some other cause, the supply of investment capital becomes restricted and the same corporation would have to pay 6 per cent to borrow on similar security. No change whatever has taken place in the asset protection of the bondholder, nor in the regularity of his income. But because lenders of investment funds are now able to obtain a 6 per cent income, the investor with the 5 per cent bond



will not be able to sell it at par, for at that figure it yields only 5 per cent and buyers will not pay that for it when they can purchase current offerings at 6 per cent. The price of the 5 per cent bond will become adjusted to a 6 per cent basis, that is, the price will decline. Or if borrowing should become easier so that corporations could borrow at a rate of 4½ per cent on similar security, a readjustment upward to a 4½ per cent basis would follow, the price going above par.

### Bonds Affected by Interest Rates and Bonds Affected by Earnings

Although the general proposition has been laid down above that bond prices respond to changes in interest rates, some qualification must be introduced. The term "bond" is an all inclusive one, sufficiently broad to cover United States Liberty Bonds and the debenture issues of a company which is in receivership. Interest rates exert a direct effect upon securities about which there is no question as to the permanence and regularity of the income. In other words, bonds of the highest grade are those which correlate most closely with changes in the rate of interest. When an element of doubt exists as to the certainty and regularity of payment, the price of the bond will be affected in part by interest rates, but also in a large measure by the earnings of the issuing corporation.

By the phrase "when doubt exists", it is not meant to imply that it is only bonds of corporations which may default on their interest payments that are so influenced. Such a "doubt" exists in any case if earnings even for one year have fallen below interest requirements or have barely failed to cover them, in the case of an industrial company. Here there is actually no reasonable doubt, if the corporation is in sound financial condition, that the decline in earnings is due to some temporary depression in the industry. But bonds of the highest grade uniformly show a healthy margin over interest charges, and any security which is in the slightest degree affected by fluctuations in the earnings of the issuing corporation is of secondary investment merit and so responsive in part to interest rates and in part to earnings of the issuing corporation.

## Security as Affecting Price

Protection is afforded the bondholder either by means of a mortgage securing his bonds, by a lien on specific property, or else it is in the more general form of a direct obligation of the company without any specific lien. Mortgage bonds may be secured by a first mortgage on property valued many times in excess of the bond issues; the protection may be afforded by a junior lien—that is, by a mortgage on property on which there are prior mortgages. The degree of security back of a bond does exert an influence upon its price. An underlying, or first mortgage, railroad bond will sell on a better basis than a junior lien bond of the same company.

Any mortgage bond will sell on a better basis than an unsecured debenture of the same company. But as between bonds of different companies, this asset protection is not a controlling factor in price. Merely for the purpose of illustration, on a given day in June, 1926, Western Maryland first mortgage 4 per cent bonds were selling on a basis of 5.91 per cent. These bonds are secured by a first lien on 378 miles of road. American Chain debenture 6's, unsecured by any mortgage lien, and representing only the direct obligation of an industrial company, were selling on a 5.65 per cent basis, reflecting the judgment of the market that they were a more desirable medium of investment than the Western Maryland mortgage bonds. Attention merely to the lien protection in this case would give practically no assistance to the investor. The factor was secondary to the earnings of the company and its financial condition.

## Financial Condition of the Company as Affecting Price

Corporations with large bonded indebtedness must be prepared periodically to disburse large sums of cash in payment of interest on their obligations. Regardless of how much the plants of the company may be worth, if it cannot raise money to pay the interest on its borrowings, it is a fit subject for receivership. The investor does not place his money in bonds for the purpose of buying a lawsuit. He is interested more in stable and regular income. Hence, the corporation's working capital or the margin of its current assets over its current liabilities and the character of the current assets should receive careful attention.

The importance of the liquid position of a corporation from the standpoint of the prospective bondholder may be given point by an illustration. A corporation which we will call the XY Company showed a five-year earnings record which, for the type of company, was satisfactory. During the five-year period, all fixed charges had been covered 1.81 times on the average. It was engaged in a line of business regarded as one of unusual stability, and this showing of earnings of not far from double all requirements would appear satisfactory. But turning to the balance sheet, a rather sinister fact would appear. At no time during the five-year period had current assets exceeded current liabilities by more than $600,000. More than this, for three years, current liabilities had exceeded current assets. Even more alarming, the excess had been growing. Whereas three years before, the current liabilities were $191,000 in excess of current assets, this amount had increased to $2,152,000 in the course of a single year, and in the following year it had increased to $3,431,000. While this had been going on, each successive year also showed a decline in cash. The corporation's cash holdings had pursued a downward course, so that at the end of successive years the balance sheet showed respectively $1,740,000, $664,000, $148,000 and $107,000. Bond issues of $30,000,000 and bank loans of $2,500,000 were outstanding. The situation clearly indicated is that the corporation cannot long continue to meet its obligations in due course and, when this is the case, a receivership is only a matter of time.

## Margin of Safety

From what has been said in the preceding chapter regarding risk as affected by the type of business carried on, it is obvious that no general rule can be laid down regarding the margin of safety back of interest requirements. By margin of safety is meant *surplus earnings over and above all interest requirements.* A margin of safety that is satisfactory for a railroad might be a dangerous margin for a company manufacturing washing machines; or one that is safe for a telephone company would probably be hazardous for a textile enterprise. Among railways or industrial corporations of approximately equal strength, variations will likewise be shown.

Taking the five years from 1921 to 1925, inclusive, Atchison covered all its fixed charges 4.71 times. Canadian Pacific and Union Pacific earned, respectively, 3.58 and 3.09 times all their interest requirements. Southern Pacific and Pennsylvania covered fixed charges approximately 2½ times, while Louisville and Nashville and New York Central earned about double all their interest charges. Among roads of slightly less strength, Great Northern and Kansas City Southern are found earning fixed charges somewhat more than twice over.

For the soundest types of railway bonds, we ought to look for an earning power of substantially double all fixed charges. When the margin is less than this, it does not mean necessarily that bonds are undesirable. But there is more of a speculative tinge attached.

For industrial companies, the margin above fixed charges should be larger than we look for in the case of rails. As a general rule, earnings of three or more times all fixed charges are a good criterion to apply to an industrial bond. This standard may be raised when the bond is that of a company influenced by more than the average business risk and lowered in the case of a company producing primary commodities, such as Anaconda Copper or Bethlehem Steel.

## Using Earnings to Measure Bond Security

It will be noticed above that we have referred throughout to the number of times all fixed charges have been earned rather than to the number of times the requirement on any specific issue has been earned. Every corporation has certain priorities in the payments which it must meet. First mortgage bondholders have a call upon assets and earnings ahead of junior mortgage bondholders. The latter take precedence over noteholders and general creditors.

The "A" corporation, let us say, has fixed interest charges of one million dollars a year on its first mortgage bonds, charges of two million dollars a year on general mortgage bonds, and additional charges of two million dollars due to noteholders, collateral bondholders and banks. This is a total of five million dollars. Let us say the corporation earns exactly five million dollars applicable to interest charges. If we were to look only to the first mortgage bonds in which we were interested, we should see that interest on them was being covered five times, and that on the surface this appears ample protection. But the company is earning exactly enough to meet all of its interest charges, and no more. A decrease of 10 per cent in its earnings would leave it with a deficit which it would have to meet by drawing upon its surplus, or by borrowing.

Obviously, this situation could not continue long without impairing the credit standing of the company. As borrowing became more difficult, the company might find itself unable to meet some of its obligations to creditors and insolvency would result. The corporation might not be bankrupt at all. Bankruptcy ensues when liabilities exceed assets. But a company is insolvent when it cannot meet its current obligations, even though its assets may be far in excess of its liabilities. When insolvency occurs, a receiver is appointed and readjustments of capital structure are very likely to follow. The position of the first mortgage bondholders is probably safe, for they are the preferred creditors. But the prices of all securities of a company decline with the advent of receivership and there is always the possibility of deferment of interest if the enterprise is very hard pressed for cash. The aim of investment is to purchase an income and not to purchase a lawsuit. Hence, while the earnings available for interest charges on the particular issue should be a point to be investigated, of equal or greater importance is the margin over all fixed charges of every sort.

## Capital Structure

Since secured bonds rank first in their claim upon the company's assets, a top-heavy capital structure, that is, an undue proportion of funded debt as compared with owned capital, is not of so much concern to the bondholder as it is to the stockholder. But as between different classes of bonds, this is an item to be given consideration. It is particularly so in the case of corporations, such as railways and utilities, with a very large funded debt. Here, if the margin of earnings over interest charges is not large, junior securities, protected only by a third or fourth mortgage lien, or securities which have no lien at all but are merely general obligations of the company, do not command an investment rating. Securities of this type are the ones which suffer in reorganizations.

The junior bondholder often comes out of a reorganization with some of his former bondholdings exchanged for stock in the new company. The margin of safety looked for should be higher in accordance with the volume of securities ahead of the one which is under consideration. A margin that might look fairly satisfactory, if first lien bonds were being purchased, would look less satisfactory if unsecured notes were under consideration.

Another factor to be given consideration is the corporation's record of dividend payments. The earnings record available should be complete enough to enable the position of the bond to be judged on this basis alone. If earnings are available for only a few years, however, the record of dividend payments will throw some light upon the stability of the company's earnings. We may read that dividends have been maintained on the common stock without interruption for a period of twenty years. This, in itself, would speak well for earnings stability. The fact that over a long period a corporation has enjoyed a conservative and efficient management which has enabled it to establish and maintain dividend rewards to its stockholders, lends confidence to the view that may be taken of its bonds.

## The Trend of Earnings

In taking average earnings available for fixed charges, it will not do to stop simply with a given average, say, of three or five years. Some attention must be given to the *trend* of earnings. This is particularly so when an average for five or more years is taken. If the trend is downward, the average may still show a good margin over fixed charges. But actually, this margin is becoming smaller year after year and is made to appear unduly large by the inclusion of years which are now merely a matter of history. When the trend of earnings is downward or appears to be so over, say, a five-year period, then it will be best to disregard the average and take the earnings of the most recent years, say two or three at the most. There is a suggestion here that the company's affairs have turned somewhat for the worse and in order not to make the situation appear better than it is, records of years of past prosperity ought to be disregarded.

When the reverse of this situation obtains and the trend is steadily upward, it might be urged that the same policy should be followed. Certainly the upward trend is a favorable argument in itself. But remembering that the investor is purchasing rather than selling, he ought to be interested not in finding absolutely the best things possible about his securities, but interested in getting a good test of them under all sorts of conditions. In order not to be misled by an increase in business which may not be permanent, when the trend of earnings is upward, a longer average, say, of five years, will afford the most conservative criterion.

## Present and Past Fixed Charges

With many corporations, a growth in funded debt will be noticed over a period of years. Earnings five years ago may have been substantially above the corporation's fixed charges at that time. But the same earnings for the current year might barely meet interest charges because funded debt has increased in the meantime. It may be said that we know the present condition of the company—what its funded debt is now. Accordingly, we should take *past earnings* and apply them to the *current fixed charges* in order to get at its performance under varying conditions.

This may, however, weigh opinion unfairly against the corporation. It would be almost certain to do so in the case of an *expanding* public utility. The full effects of extensions of the plant and equipment of power companies, light companies, telephone companies and similar enterprises are not immediately apparent. Utilities of this character cannot be opportunists. They must plan ahead and anticipate the growth of the demand for their service. With such a company, if we take the earnings of five years ago and apply them to current fixed charges, there is a fair chance that we shall be disregarding entirely the future earning power of the assets for which much of the funded debt has been issued.

When the funded debt has increased materially, account ought to be taken of the reasons for which it was expanded. If the increase in funded debt is accounted for by the acquisition of new earning assets, then the fact that earnings in past years would not be sufficient to cover present fixed charges ought not to prejudice one against bonds of the company under consideration. While conservatism is desirable, the investor ought not to lean over backward, and it is a species of leaning over backward to look for earnings in by-gone years to be sufficient to take care of a funded debt increase which represents an earning power not available to the company in the past years under review.

## Preferred Stocks

In this chapter on bonds, it remains to be noted that preferred stocks of the highest grade are influenced by the same factors which primarily influence bond prices—money rates. Preferred stocks of the highest grade are those of leading railroads which have earnings of five or six times the dividend requirements. Preferred stocks of industrial companies rarely are found in this class, although some industrial preferreds—those of strong companies of very large earning power—do sell more with relation to money rates and investment yields than they do with regard to the course of earnings for the corporation.

Second grade railway and public utility issues and the bulk of industrial preferreds, however, are influenced to a considerable extent by the earnings of the issuing corporation. Relatively few of the second class railroad preferred issues and relatively few industrial issues can show such large earnings that the dividend is never endangered.

In a period when money is easy, but when the outlook for profits in industrial lines is doubtful, we may have the phenomenon of the highest grade preferred stocks advancing, while preferred stocks of medium grade and speculative preferreds decline. This is a sharp differentiation of the motives which lead investors to buy. The high grade preferreds advance because the yield on investment securities is declining and these issues, ranking as prime investments, but affording a higher return than bonds, are bought up by the overflow of investment capital from the bond market. But this investment capital does not flow into securities which have a tinge of speculation about them. On the contrary, there is a tendency for holders of second grade preferreds in such a situation either to shift to the higher grades if they are primarily investors, or to get out of the market entirely if the holdings have been purchased with a speculative intent.

In summary, it may be said simply that the handling of funds placed in high grade preferreds should follow the same principles that govern the handling of funds placed in bonds, while money placed in second grade preferreds should be handled in accordance with the procedure indicated for holders of common stocks.

# CHAPTER X

## ANALYZING LAND VALUES

The experienced observer of commodity prices or of security prices comes to an early realization of the danger of generalization. An index of wholesale prices composed of a large number of articles may be showing consistent decline. But this fact alone would indicate nothing regarding the price trend of any single article in the index. While the greater number might be following the course of the index, some commodities might be heading in exactly the opposite direction. Experienced traders in stocks know that as a rule prices tend to move together, but there is often the phenomenon of some stocks moving counter to the general trend for individual reasons. In neither of these fields is generalization so hazardous, however, as it is with regard to prices of real estate.

### Selectivity in Land Values

The mere existence of land and the presence of a population are but minor factors in its price. The use to which the land is capable of being put is more important. It becomes necessary, accordingly, at the start to make a few broad classifications of land with respect to its utilities.

Land which contains a wealth of mineral resources under the surface, such as copper, or petroleum, is obviously best fitted for mining or drilling to exploit the valuable commodities which lie in the soil. Other lands may possess no hidden mineral resources at all, but may be well suited to the raising of annual crops. Other land situated at the confluence of waterways or railways, while possibly equal in fertility, is devoted to different uses through the congregation of people there in cities. Within the city itself are found districts devoted to large manufacturing industries, districts devoted to handicraft trades, districts in which the retail trade is predominant and sections which are almost entirely devoted to residence purposes, the residential districts in turn being often sharply differentiated by the economic status of the bulk of people who live in them.

## Factors Affecting Land Values

The mere cataloging of different land utilities is sufficient to indicate that different factors are taken into consideration in buying land for various purposes. The retail merchant who is looking for a store site is not in the least interested in the fertility or productivity of the ground. But to the farmer, whether he is raising wheat on hundreds of acres or garden truck on a farm of two or three acres, this factor of fertility is of primary importance. The suitability of the land to produce the crop is a major factor in determining whether he will make money or get into financial difficulty. And within given areas where all land may be suitable for a specified crop, varying degrees of fertility will operate to produce price variations. Climate, including temperature and moisture, is another natural factor closely related to that of fertility. But the natural advantage of land by reason of soil and climate forms but one division of the elements in farm land value. The commercial farmer must get his crop to the market. Here the factor of location is of importance. Transportation facilities, as well as nearness to market, affect the farmer's income and the value of his land.

Manufacturing enterprise must consider proximity to sources of raw materials and fuel, to market and to a dependable labor supply. The relative importance of these factors will vary with the nature of the industry. Freight rates on heavy raw materials, on fuel and on the finished product are factors that are balanced in the determination of efficient location of industry.

With retail trade the problem becomes one of local demand and supply. Since retail shopping in most lines possesses more of the element of the fortuitous than of careful planning, those sites are most valuable which are passed by the greatest number of potential customers. Every element of this is important. A given street may be traveled daily by more people than another thoroughfare. But if the passers-by are mainly workers hurrying to and from their work, the proportion of potential buyers is small, and retail sites on a street of less dense traffic, but a traffic made up in great proportion of shoppers, would be far more desirable.

Land for residence purposes is influenced in price by such natural advantages as elevation, drainage and shade, and by such other considerations as remoteness from noise, smoke, etc., from factory districts and by convenience of transportation to the business and shopping sections.

Consideration of these and of many other factors operates in the minds of land owners and of prospective users of the land to create prices for it and prices for its use—rent. It will probably conduce to clarity if one particular class of land use is taken for consideration in reviewing the working of these considerations. Land for commercial or business utility offers probably the best medium for this purpose.

## Prices of Business Properties

Reference has been made to the prime aim of retail store locations—selection of a site which is passed by the greatest number of potential buyers. Land must, first of all, possess utility for the purpose in mind. No large retailer would think of setting up business in a sparsely settled outlying district.

The search will be for locations that will be accessible to the greatest possible number of potential buyers. Because corners afford excellent opportunities for display windows on two thoroughfares, they are preferred to locations in the inside of the block and, when the corner is formed by the intersection of two principal thoroughfares, it is here that the greatest demand for space will be found and it is here that the highest prices will prevail. Other sites grade downward, but with their prices and rentals fixed by the same consideration. Short blocks, as a rule, are preferred to long blocks because the cross streets feed the main business thoroughfares. In many places the west side of north and south streets will command higher rentals than the east side because of the tendency of passing crowds to seek relief from the hot sun on summer afternoons. When shoppers are brought into the city from outlying sections, or when the shopping district is served by transit lines to bring shoppers from the residential sections, high prices for retail sites will prevail in the sections where there is ready access from the transit lines.

The same factor, that of balancing the land against its suitability for the purpose for which it is to be used, is found in the selection of industrial sites. Because factories find freight and drayage important items in their cost of doing business, land in industrial cities along or near rail or water ways commands a premium for this type of use. And, similarly, because quickness of approach to the business section is of importance to business men and of convenience to the feminine members of their households, residence sites which combine the factor of good surroundings with the factor of convenience in reaching business sections are those which command the highest prices and the highest rents.

## Land Prices and Rentals for Business Purposes

With all classes of property it must be noted that the advantage of each site is relative. No two blocks have exactly the same element of desirability. With every class of land, there are gradations in its suitability for a given purpose, and the price for which the land sells and the rent it brings are determined. in the last analysis, by the ability of firms or individuals to increase their profits by locating on a given site. The rent the storekeeper can pay is determined by the size of his profits. If rapidity of turnover is a vital element in those profits, he can afford to pay a premium for choice locations in order to increase his turnover by appeal to the larger crowds that pass his store, but a seller of windmills for country estates would be very foolish to contract for ground space on the corner of two main thoroughfares. The location would probably add in no way to his volume of business, while the high rental would materially impair if it did not entirely obliterate his profits. In the same way, farm land has its price and its rental value controlled by the profits which farmers can make from raising the crops for which the soil is best suited.

Now if business profits determine the price which the business man is ready to pay for a commercial location, or the rent he is willing to pay, and if profits from farming determine the price or the rent which the farmer is willing to pay, can it not be said that a close correlation will be found between rentals and profits? In other words, will not the prices of both varieties of land tend to fluctuate with the business cycle? The question is raised at this point. But before proceeding to consider it, some further factors which are of importance in fixing land rents and land prices ought to be considered.

## Effect of Term Leases

If business houses were accustomed to lease property by the month, with a reconsideration each thirty days of the rent they would like to pay, in the same way that commodities are bought from week to week or month to month, probably a very close correlation between commercial rents and the business cycle would be in evidence. But the location of a commercial enterprise is an element that is relatively immobile. A single enterpriser who has desk room can shift his location as often as he pleases with little trouble or expense. But a store with large stocks of goods and fixtures which are particularly adapted to one place, or a factory with heavy machinery, cannot move without incurring great cost and loss of business during the process. The factor of land scarcity makes it impractical for the house to move or consider moving without having another place definitely in mind and definitely contracted for. As has been indicated, location in itself may be a definite factor in the profits of a retail enterprise. Places are leased for terms running from one year to long terms of years. This makes the determination of rents much more infrequent than the determination of commodity prices or security prices. The landowner's holding price may be revised materially during the term of a lease, but because cyclical swings may occur once or twice during the term of commercial leases, evidently the variations of business during that time will not be reflected directly in contract rents.

### Effect of Anticipation

Rents are determined not only by the present utility of property but by its anticipated future utility. Because real estate is bought by commercial houses for the purpose of establishing themselves definitely in a given location or because it is rented for long periods, an estimation of the future value of the place always plays an important part in fixing the price or the rental. This is a factor tending to smooth out such variations as might occur in the contract rent if regard were had only to the present when places are leased for a short term. The ability to anticipate changes in districts or increases in the desirability of commercial sites is an important sixth sense in business. For this reason a location which now appears to be relatively undesirable may be acquired by an enterprise which lays less stress on the present utility of the place than upon its future utility. The general effect of this anticipation is to level or smooth changes in realty values.

## Effect of Growth and of Intensive Use

In measuring phenomena of the business cycle it is customary always to allow for normal growth because the population of the country is increasing. Normal business for a given corporation in 1900 would be subnormal business for that same company in 1925. The crop of wheat or the production of iron and steel sufficient to meet the needs of the population twenty-five years ago would fall short of normal requirements of the population today. This increase in population has the same long-term lifting effect upon land values. It is felt most where there is the greatest density of population; and where, because of topographical or transportation conditions, the population growth exerts a continual pressure by increasing the demand for a limited land area. An increase of 1,000 people who do their shopping at a given center may add from $20 to $30 per front foot to the value of retail business sites.

The increase in values from this source may be offset by changes in the intensive use of land. As pressure or demand increases instead of extending itself over a wide area there will be more intensive use of property in the center. So there is a tendency for the growth to concentrate in central districts as by pushing up skyscrapers to replace five- and six-story buildings. This adds to the commercial utility of the best business properties. This phase of land utilization is parallel with the effect of efficiencies in production upon the prices of manufactured goods.

In the same way, increases in transportation efficiency tend to counteract the normal rate of increase in land values. If we can imagine a city occupying a square mile and with no means of tapping surrounding territories for its overflow of population, we should see land values mounting with extraordinary rapidity from decade to decade. But if, by the extension of transit facilities—the street car and the motor bus—near-by land can be made readily accessible to the center of the city, the rate of the growth of values in the center will be checked. It is important to note that it is the rate of growth that is checked rather than the absolute growth, for while the extensions of transit facilities and the bringing of new areas into a metropolitan district may produce a boom in the outskirts which attracts all the attention and is more spectacular, there is, nevertheless, the same effect being exerted in a more quiet way upon land in the center of the city.

The growth at the center is less spectacular but is real and probably more stable. Land on the outskirts has been made more valuable by being more accessible, but land in the center is still *relatively* more accessible.

## Effect of Shifting Centers

While it is true that the use of land is a factor that is relatively immobile, nevertheless over a period of years, districts within cities will shift. Unless there are limiting topographical factors, business districts will expand as the pressure for space increases. They may shift to another center altogether, tending to follow the center of buying power in the community. This operates as another brake upon the absolute increase of commercial rents. If the business district of each city were closely circumscribed and if it were not possible to extend out of it, the rise in values due to population growth would be much more rapid than it actually is. But because business districts can and do expand—because they can and do shift to new localities entirely—there is a force at work tending to offset the concentrated pressure for commercial space.

These shifts in business and industrial centers may be so decided that values in a section toward which business is growing may be rising rapidly while other districts, once the business mart of the community, may be passing into less valuable uses and declining in value. So in a community where this shifting has taken place to a marked degree over a period of years, instead of finding that the rent of business sites has increased commensurately with the population growth, we may find that the gain has not kept pace. The business center of twenty years ago may have its values stationary or even declining, while values in some other sections not then in use at all for business purposes may exhibit a very rapid advance.

## Fixing Land Price

The owner of real estate values it in accordance with the actual or the anticipated monetary income from it. In the case of property which is improved to its best use, the actual present monetary income, capitalized at a rate representing the demand for property of that type, will closely approximate its market price. By property improved to its highest use is meant land which has been improved by a modern building of the best construction which is thoroughly well suited to the needs of prospective tenants in its locality. An expensive apartment house put up in a relatively inaccessible place on the outskirts of a city on land of comparatively low value would be an instance of overimprovement. Here the cost of the building is out of proportion to the value of the land on which it stands. A two- or three-story frame dwelling standing in the heart of a business district represents underimprovement. The property does not bring in the income which its advantages of location ought to enable it to return, for the tenant measures both the value of the land and the building in his estimate of the rent that he will pay. A modern fireproof office building standing at the corner of two principal business thoroughfares is an example of property improved to its best use. Here nothing has been left undone to take full advantage of the income-producing possibilities of the land. The owner has a first class real property investment.

Ownership of real property is really in a midway position between an investment and a business. Because there is an element of management involved in the handling of property it does not rate as a pure investment. But in the case of high class property the stability of return tends to offset this purely business factor.

The rate of return to investors is proportional to the risk involved in renting space for properties of that particular type. A net return of 5 per cent on high class buildings is not unusual in normal times. Owners of residences, loft buildings and special type buildings may look for an 8 to 10 per cent return. But real estate values will not fluctuate with interest rates as will investment securities. When the interest rate rises we look for a fall in the price of prime investments. If a rising interest rate compelled realty owners to dump their properties on the market, we would probably see the same phenomenon in realty prices. But the income of the land owner is subject to some degree of flexibility while that of the bondholder is inflexible. Increasing costs, either of taxation or maintenance, lead to an advance in rent by the landholder, and because rising interest rates are usually found to synchronize with business prosperity, the commercial community is prepared to meet the rise. Actual and anticipated business profits exert a closer influence upon rents and land values than the rate of interest. Consideration of the more particular working of this factor may be deferred for a moment.

Farm land values will tend to conform over a period of years to the swing of prices for farm products and to the course of profits in the agricultural industry. Abnormally high prices for agricultural products cause attention to be turned to this field, leading to an increased demand for farm property and to extension, as marginal land is taken up and placed under cultivation. A collapse in the prices of farm products, leading to considerable financial difficulty, as it does by reason of the heavy encumbrances generally carried on property of this type, brings about a shrinkage in values as owners either become discouraged and sell out at greatly reduced figures or as involuntary sales are brought about by foreclosure.

## Business Property Values

To a large extent, factors affecting the prices paid for commercial properties are local. This makes it necessary to focus more upon sectional than upon country-wide conditions. The effect of increasing population as a long-term price element has been referred to above. In times of prosperity, with profits from business on the increase, business houses are able and willing to contract for higher rents than they would consider possible if the question of renting arose in depressed times. The factors that make commercial business profitable may be nation-wide or they may be largely local. Or a nation-wide prosperity may be exaggerated because of local conditions. The boom in Florida property rising to a peak in the winter of 1925–1926 is a concrete illustration of this exaggeration.

The effect of fluctuations in the business cycle upon the value of business property in a given city will depend very largely upon the nature of the industries upon which that city is dependent. Rents and land prices in a city dependent almost entirely upon one industry will be correlated with a fair measure of closeness to prosperity or depression in that industry. A long period of depression in textile manufacturing will find its reflection in a lesser demand for residential and business properties in cities whose industrial life centers almost entirely around that business. Rising prices and expanding profits in the rubber industry, leading to expansion of factories and to increased housing demands, will be reflected in a rapid rise in land values in tire manufacturing centers. When the business interests of a city are diversified, relationship to cyclical changes is less direct.

## Overproduction

In general, the phenomena of the business cycle or the phenomena of fluctuations in prices of given commodities will be found to have their counterparts in local real estate price changes. A general increase in country-wide business activity which is reflected in a corresponding increase within a given community will bring about very shortly a greatly increased demand for commercial space. Rents and land values at such times will mount rapidly. The rise in rents and the boom in the real estate market attract at once speculative builders. The developer becomes active in residential sections and operators improve business property or convert properties to business uses. A building "boom" ensues as the progressive land owners and the speculative builders endeavor to meet the enlarged demand for offices and houses. New capital is attracted into realty as profits from rents and from sales rise.

This movement is exactly parallel to the movements in an industry when manufacturing enterprises enlarge plants to take care of increased demands for products during times of prosperity. In industries, sooner or later the increased plant capacity enables producers to catch up with the demand, and upon any decrease in consumption, dealers in the products find themselves overstocked; overproduction has occurred in the industry. In a similar manner the speculative building movement progresses until the demand for space is met. Then, either because the boom is pushed further or because demand subsides due to a decline of business profits, a surplusage of space is found. This may exist in business buildings, in factories, in lofts and in dwellings or it may be found in any one of these types of buildings. An overproduction in commercial space or in housing has occurred in exactly the same way that overproduction occurs in industry.

## Effect of Overproduction

When overproduction occurs in a manufacturing industry, plants curtail operations and the price of the overproduced commodity tends to decline until the supply is again brought into equilibrium with demand. When overproduction occurs in building, the same curtailment is an early manifestation of the condition.

Space at first becomes more difficult to rent and the percentage of vacancies increases. This condition will precede, as a rule, any change in the actual rentals. But as it continues, changes in the rent level will take place through actual reduction in the rates asked for the less desirable business and residential properties and, very often, in the latter through concessions of rent for a month or more in the more speculative, that is, the least desirable buildings. There is, thus, an actual change in rent levels which may be quite extensive or which may be confined largely to marginal business and residential properties. In the best business property no change may occur. The demand for the less desirable properties has simply fallen away, leaving its effect upon the rental value of these properties, but the demand for the best properties continuing, their rents may be unaffected by the change.

In the same way, sales prices of the less desirable business and residential properties will show a declining tendency. But this will not be as acute as declines in rentals. The land owner must use every effort to keep his property rented and bringing in an income, otherwise the cost of carrying it will prove a heavy burden upon his income. But unless he is in such financial straits that he is compelled to sell in order to raise ready cash, he need not and probably will not offer his property for sale in a declining market. Rather he will hold for a return to higher figures. In some cases, this holding may be justified; in others, overproduction of buildings may have been so great that a decade or more will pass without land values returning to the levels that once obtained.

A local real estate depression, then, is characterized more by a stagnation in the realty markets than by an actual moving downward of prices. Rents of less valuable properties will actually decline and rental of good properties will be less active. In the case of sales, with little demand and with that demand effective only at lower prices, owners will hold their property out of the market and the local market will "go dead". This stagnation in a realty market is the equivalent to a decline in a commodity market. It is the same phenomenon, but exhibited in a different way, and exhibited because of the nature of the property owned.

## Appraisal

Appraisal is a highly specialized department of the real estate business. The purpose of the following paragraphs is not to go into the particularities of the field, for which the space would be inadequate, but rather to summarize some of the guiding principles that may be used for rough estimations of property values.

## Valuation by Income and by Summation

Two broad divisions of the bases that may be used to gauge realty values may be outlined at the start. We may attempt to find the value of a particular plot of land and then to estimate the value of the building which stands on it. A combination of these figures will give an idea, more or less accurate, of the property's value as a whole, depending upon the age of the building, its suitability to its site, and the purpose for which it is planned to be used. Or, it may be that the property under consideration is bringing in a rental income. It may be looked upon entirely as an investment and instead of proceeding to appraise land and buildings separately without regard to the income from the property as a whole, that income properly capitalized may be taken as the basis of valuation.

Both methods are generally desirable, the one affording a check upon the results obtained by the other. In some cases the land is so underimproved that income from it would be totally inadequate to give a fair idea of its value, while on the other hand, analysis of income may reveal a degree of overimprovement that would not be apparent from the process of separate valuation of land and building without regard to the income return.

## Valuation for Business Purposes

As indicated previously, location is of importance, depending upon the character of the business. And, as a rule, the income from a property is of less importance to a business house than its availability as a suitable location for the enterprise. Since rent forms an important item in the cost of doing business for every commercial or industrial enterprise, each business must have a definite standard of the ratio that rent should bear to gross returns. This ratio is the known factor. With it as a starting point, the business house must weigh the advantages of location with regard to surroundings, accessibility, and similar advantages. Then it can determine whether the rent required in the given location is in proper ratio to its business or to the anticipated business that the advantages of a better location indicate may be obtained. The problem viewed in this way is largely one of proportionality between actual or estimated business advantage from a given site and the cost of doing business at the given location.

## Arriving at Land Values

Where properties are substantially homogeneous, that is, fairly evenly suited to a given use, records of recent transfers will afford a basis for approximating the land value. Not only may actual transfers be taken, but the prices at which like properties are held by their owners and the prices which buyers appear willing to pay will form a check on this process of estimating.

Recent prices, of course, may not be representative. Through abnormal activity or slackness in the realty markets, values as represented by recent transfers may be too high or too low. Where the character of the land has not changed, that is, where it has not become suitable for a more profitable use in the course of time or deteriorated to a less valuable one, the trend of value may be worked out by taking the sales of similar property for a period of years, reducing these figures to unit prices and in this way obtaining a fair idea of the rapidity and extent to which prices have mounted, or of the regularity of the movement.

## Value of Buildings

In the case of buildings of fairly recent construction, the actual cost may generally be obtained. This may be obtained from exact data or from competent estimates. With such figures known, there is the matter of allowing for such depreciation as has occurred. Sometimes the building may be an actual encumbrance, that is, the income from it may be totally inadequate to the land on which it is built, or it may be an encumbrance because of the special requirements of the purchaser. This will make a new structure necessary. In such a situation, the land is what the purchaser is really buying.

The value of the old building to him will be represented approximately by an annuity for the remaining life of the building. He may intend to replace it at once or after a few years. If it is anticipated that the building will be replaced at the end of two years, it is worth to the purchaser the present worth of the income that it will bring for that time.

The problem is seldom as simple as the foregoing illustrations, however. When the purchase is of property on which there is already an improvement, obviously sales prices of similarly located properties will be of little use because they may be improved in different ways. Sales prices represent the price paid for both land and buildings. And unless buildings are so much alike that it may be assumed that the price paid for a similar property is fairly representative of the one under consideration, the story told by recent transfers will be irrelevant. It is in situations of this sort that the services of the expert appraiser, familiar with local land values, will be found most valuable. Valuation by these analyses of land and building values separately is desirable when the prospective use of the property is for purposes other than investment or residence.

When property is being bought as an investment, however, it is possible to lay more stress upon income as a valuation asset. Land and buildings, while separate elements, are yet so closely related that the one reflects upon the other. When property which is well improved is being bought for income purposes, there is no anticipation that the building will be replaced immediately or for some time to come. Accordingly, for all practical purposes, the building is an integral part of the property, and the income, its regularity, its susceptibility to possible advance or decline is a primary consideration.

## Income as a Basis of Valuation

At the outset, it ought to be said that such rule-of-thumb methods as estimating property by a multiple of the gross rents has no place in either commercial or investment valuation.

Merely to mention what such a rough and ready method does not do is to condemn it. It must assume that the rent level is stationary and that the property will continue rented at least to its present state of occupancy; the expense of maintaining the property and the rate of depreciation upon it are all left out of consideration. And both of these are apart from the fact that ideas as to the proper multiple will change greatly, the tendency being to regard a high multiple as normal when values have been mounting rapidly, whereas it is but a product of the movement.

## Gross Rents

Gross rentals are capable of ascertainment. And once actual rents are obtained the process of reducing to units such as per square foot, per front foot, or room unit is a simple matter. But these rents are only those which are obtaining under current leases. Taking the current rent as a basis without further consideration is to ignore the possibility of fluctuation. A better picture may be obtained by the empirical method of estimating the trend of rents, allowing for the anticipated effect of further increases in value, or allowing for the depressing effect of overbuilding in case production of structures of like types is being pushed rapidly.

If realty values have not changed greatly, an average of rentals for a period of from three to five years may give a better line on the true growth than will present figures. If there is anything temporary about a rise in values, this process will serve to iron out anything of a temporary nature in the current figures. If, however, values appear to have worked permanently higher, either by a change in the character of the district or from some other cause, taking too long an average would serve to depress unduly the gross rental estimates.

It is well also, in considering gross rentals, to allow for their possible impairment if the building is one which is vulnerable. A building enjoying light on four sides, but with adjoining properties on both sides as yet unimproved, is one where the current rent may well be impaired by adequate improvement of the neighboring sites. When this is done, the premium paid for light will disappear in so far as it is diminished by the abutting structures.

Not only must allowance be made for changes in rent levels, but for the possible loss of rent through vacancies. If property has been well managed, it may be possible to obtain and take as a basis of estimates actual figures for the building. The question of management is important here. If the property has been kept in poor repair and mismanaged, the percentage of vacancies will be unduly high. Local experience is generally necessary to determine what is a fair percentage of gross rent to allow for vacancies. In the case of retail stores on the best streets, the item may be entirely negligible. With other stores in good locations, but not on the best streets, 5 per cent of gross rents may represent the maximum allowance to be made for periods of unoccupancy.

In office buildings, the ratio will be somewhat higher, the figure depending again upon the desirability of the building and the demand for office space in the locality. An average of 8 per cent of gross rents with a smaller figure for buildings situated in the most central locations is likely to be a fair approximation.

The percentage of vacancies in apartment houses may be assumed to run from 5 to 10 per cent of gross rents and, for lofts or specialty buildings, the allowance may need to be higher, it being understood again that experience in the locality and with the type of building under consideration may furnish a much closer and more accurate guide than general ratios.

### Operating Expenses

The item of actual operating expense is one that is usually capable of more exact estimate than any other figure. Such expenditures as those for lighting, for insurance, for salaries of building employes, for heat, etc., may be obtained from current figures if the building is being well maintained, with modifications for such improvements in the service or such efficiencies in management as the situation may dictate.

### Taxes

It is sometimes said that the present figure for taxes is the one always to be taken. Of course, in the case of this item, it would be entirely useless to pay attention to tax figures of prior years, for the tax bill is one whose total seldom fluctuates except in an upward direction. Current taxes, then, are of far more use in calculating this item of expense than those of any preceding years. But even this figure may need revision at times. If the section is one in which values have been mounting rapidly and in which building has been active, the current tax figures may be too low. Before taking the current tax rate as the last word with regard to this item, it will be well to consider the possibility of increases in the tax rate, due to increases in the municipal budget or to increases in valuation due to conditions in the particular section under consideration. With these modifications, the current taxes may be accepted as at least a working basis.

## Depreciation and Repairs

From the time a building's doors are thrown open for occupancy, structural depreciation sets in. By structural depreciation is meant not only depreciation of the building itself, but of separate parts of the structure. In calculating depreciation there are two viewpoints to consider. There is the actual life of the building, that is, the time during which it will stand as a habitable structure; and there is its commercial life, that is, the shorter period during which it will be fully suited to the utility which it serves.

In every locality there is the familiar sight of a building which is still standing and serving tenants, but which has passed its highest measure of commercial utility because it no longer attracts the class of tenantry that it was built to serve. Depreciation may be calculated as an exact percentage of the cost of the structure according to standards and generally accepted tables. Mr. Cecil C. Evers gives the following depreciation estimates:[1]

| | Structural | | Commercial | |
|---|---|---|---|---|
| Class of Building | Life in Years | Per Cent of Average Annual Depreciation | Life in Years | Per Cent of Average Annual Depreciation |
| Cheap detached frame residences | 30–40 | 2.90 | 25 | 4.00 |
| Good detached frame residences | 40–60 | 2.10 | 35 | 2.90 |
| Ordinary brick residences | 50–75 | 1.65 | 40 | 2.50 |
| Good brick and stone residences | 100–150 | .83 | 45 or more | 2.20 |
| Frame tenements | 25–35 | 3.50 | 27½ | 3.17 |
| Brick tenements and flats | 40–50 | 2.25 | 35 | 2.90 |
| Good class apartment houses | 50–75 | 1.66 | 45 | 2.20 |
| High class fireproof apartment houses | 75–100 | 1.16 | 45 or more | 2.20 |
| Cheap brick shops and dwellings | 40–50 | 2.25 | 40 | 2.50 |
| Ordinary brick shops and dwellings | 50–75 | 1.66 | 45 | 2.20 |
| Good brick and stone stores and offices | 75–100 | 1.16 | 45 | 2.20 |
| High class offices and stores of brick, stone, terra cotta and iron or steel construction | 150 | .83 | 50 to unknown | 2.00 |

Repairs form an item varying in importance with the type of the building and with its state of preservation. In the case of old buildings or buildings of cheap construction, this item will be a sizable proportion of gross rents. If costs are known, repairs may be calculated as a percentage of cost, although if materials and wages have mounted considerably, this percentage will result in too low an allowance. A method better calculated to keep the repair allowance in balance with changes in the cost of repairs is to estimate this figure at a certain percentage of gross rents, for rents will tend upward as building costs increase.[2]

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[1] *The Commercial Problem in Buildings,* Chapter 12, p. 241.

| Class of Building | Per cent of Gross Rental |
|---|---|
| Cheap detached frame residences | 10 to 15 |
| Good detached frame residences | 6 to 10 |
| Ordinary brick residences | 6 to 10 |
| Good brick and stone residences | 5 to 8 |
| Frame tenements | 10 to 15 |
| Brick tenements and flats | 9 to 13 |
| Good class apartment houses | 8 to 12 |
| High class fireproof apartment houses | 8 to 12 |
| Cheap brick shops and dwellings | 10 to 15 |
| Ordinary brick shops and dwellings | 8 to 12 |
| Good brick and stone stores and offices | 6 to 10 |
| High class offices and stores of brick, stone, terra cotta and iron construction | 4 to 6 |

When allowance has been made for these various items, the surplus remaining for the investor will be his net rent. Suppose the net rent as finally found is $1,200. What is the value of the place as an investment? Obviously, everything depends upon the rate of capitalization. If we were to capitalize $1,200 at 4 per cent, we should have a valuation of $30,000. If we were to capitalize it at 10 per cent, we should have a valuation of $12,000. The rate which investors will expect from properties is variable, depending upon the class of property and the existing return from investments, that is, the interest rate. For variations in the type of property, consideration of the risk is essential. Business buildings, meaning by this office buildings and stores on main thoroughfares, and high class residences are naturally subject to less risk of unoccupancy than business buildings on secondary streets or poorer class residences and apartments. As a matter of fact, occupancy of low priced apartments and residences may be fully up to that of better grade ones, but there is still the greater risk of loss of rent through removals, through damage to the premises, etc. Tenants in low priced apartments and low priced houses, as a rule, are not very responsible financially. So, regardless of the state of occupancy, the character of the tenants introduces a higher element of risk into the cheaper apartments and dwelling houses.

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[2] *Ibid.,* Chapter 12, p. 248.

Before the War, a capitalization rate as low as from 3 to 4½ per cent for business and residence buildings of the best types would have been considered representative. For apartments and business buildings less desirable, a rate of from 6 to 8 per cent might obtain. These figures are probably too low under present conditions. For properties not of the best type, a capitalization rate of from 8 to 10 per cent may often be found obtaining. But, again, the modification must be introduced that conditions in the locality and the state of demand for properties of the type under consideration will prove a closer guide than general figures. For properties of the highest type, a capitalization rate of from 5 to 7 per cent would be a fair range.

For purposes of illustration, the following examples of valuation through analysis of the income from property may prove helpful in connection with the foregoing discussion.

A three story and basement house, with each floor rented as an apartment, showed gross rentals of $4,200. Each apartment furnishing its own heat, this item did not figure as an operating expense. The house's income was as follows:

| | | |
|---|---|---|
| Gross rents | | $4,200.00 |
| Less operating expenses: | | |
| Water | $ 27.00 | |
| Gas and hot water | 150.00 | |
| Repairs | 179.00 | |
| Taxes | 430.00 | |
| Insurance | 52.00 | |
| Management and collections | 210.00 | |
| Total operating expenses | | 1,048.00 |
| Net operating income | | $3,152.00 |

The house was situated in a residential neighborhood which showed a trend toward improvement. There was an influx of desirable tenants and an increasing demand for space. The probability was in favor of the rent level remaining stable or advancing.

An allowance of approximately 6 per cent of gross rents, or $252, for vacancies appeared justified by experience in the neighborhood. Depreciation on the building was estimated at $420. This is 10 per cent of the gross rents, but is a low percentage on the value of the building. These two items give a total of $672 to be deducted from the $3,152, leaving $2,480 as the net rental, which capitalized at 8 per cent would indicate a value of $31,000. As the neighborhood improved, a capitalization of 7 per cent, or a valuation of over $35,000, would follow.

As indicated previously, such items as allowance for vacancies, repairs, etc., must be dictated by experience in the community and in the neighborhood where the house is situated. The capitalization rate is closely related to stability of income. If the above building had been in a neighborhood where there was evidently a decline in the demand for space, where lower class property was encroaching or where apartments of this type were in oversupply, a rate of 10 per cent would not be unreasonable. On the other hand, if it were an office building, located on a good street and with the supply of office space well proportioned to the demand, the capitalization rate and the allowance for vacancies should both be lower. For high class business property the rate may be 4 per cent or lower, while for medium class business property a rate of 6 per cent would probably be more representative than the 8 per cent rate taken above.

# CHAPTER XI

## FORECASTING SECTIONAL CREDIT AND SALES CONDITIONS

In a country as large as the United States or Canada, business conditions are never uniform in all parts. Because commercial intercourse is free and unhampered by tariffs, all sections of the country *tend* to move together, but because of the operation of local factors, business in any given city or section may vary widely from the average for the country as a whole. It is of prime importance, therefore, for business concerns with more than a local sales area to keep in touch with the trend of conditions in different parts of the country. It is equally important for the local business man to know the outlook for business in his locality and to have some guide against which to check his own business.

A knowledge of sectional business conditions will indicate which sections will produce the best results for a given expenditure of sales effort, how much business may be expected on a comparative basis from the different sections, and whether the salesman in any given section is producing the quantity of business which conditions in his section warrant.

A knowledge of sectional business conditions will enable regional expenditures for advertising to be distributed so as to place the bulk in those areas where business is in a state of activity while only "reminder" advertising is carried on in those sections where business may be depressed.

A knowledge of the trend of sectional business conditions enables the credit man to determine whether credit in any given section can be extended or should be contracted, and will serve to keep salesmen from taking orders that are too large in an area where business reaction and possible depression are in prospect. Information on sectional trends, when possessed by both the credit and sales managers, also makes possible a closer cooperation between them.

Information as to local credit and sales conditions gives the local business man something by which to judge whether he is receiving his proper share of the total volume of business being done. Local business men are prone to judge business conditions by their own sales, or by what they may hear from others. Judgment based on broad factors which represent the sum total of business is obviously a far better and sounder criterion than hearsay or sales in one store or in isolated establishments.

Another service of a forecast of local business to the local enterpriser is that it enables him to determine whether the time may be auspicious for opening a new store, for expanding his present business or for engaging in any other kind of enterprise. Also the local business man, as well as the employe, is able to determine the condition of the local labor market and to judge whether labor and employment conditions will improve or grow worse.

## Measuring Sectional Business Conditions

In judging the business situation in any community or area, there are two essential phases to consider. These are (1) the conditions existing at the moment, and (2) the future trend of business. The first of these phases is determined by what may be called thermometric indexes, or indexes that show the actual existing state of affairs. They are satisfactory for this purpose, but they do not indicate what business will be two, three or six months hence. They serve as a starting point, and forecasting then consists in determining whether business during the succeeding months will move upward or downward from the existing level. The best available general indexes of local current business conditions are the weekly reports of debits to individual bank accounts (or bank clearings where data on debits are not available) and employment statistics.

## Checks Cashed

Debits to individual accounts (otherwise known as checks cashed) represent the actual charges made to the accounts of a bank's customers because of checks drawn by those customers. For instance, if A draws a check on his bank to the order of B, the amount of the check is deducted from A's account when the check is presented to A's bank for payment either by B or his bank.

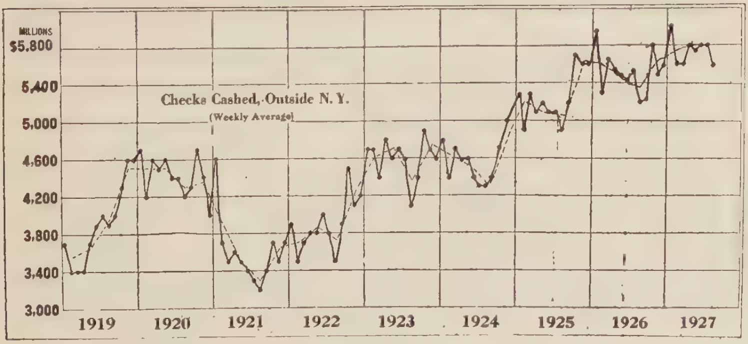
Checks cashed differ from bank clearings in that the latter include only checks that go through the clearing house, whereas checks cashed include all debits to individual accounts. Debits include checks cashed over the counter of the drawee bank, an item which does not appear in clearings. The item of checks cashed is more complete than the item of bank clearings and is not affected by bank consolidations.

Estimates have indicated that 80 per cent or more of the total volume of business transacted in any community is paid for by check. In some communities such as New York City, payment for over 90 per cent of the business transacted is probably made by check. The total volume of checks cashed, therefore, is an excellent and a direct indicator of the state of business activity.

Of course, a considerable proportion of the total volume of checks cashed represents payment for merchandise previously purchased. However, they are offset by the amounts drawn for pay rolls which require several days to make up and which represent spending that will be done in the weeks succeeding that in which the checks for pay-roll money are drawn.

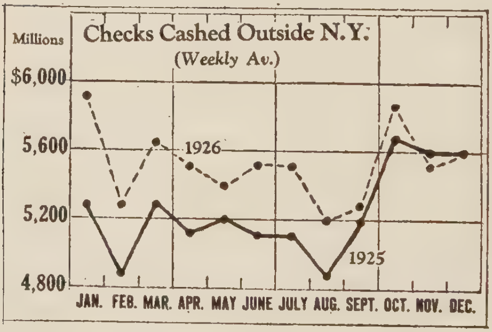
Retail purchases, which are comparatively large in volume, are, for the most part, paid for in cash and are therefore not included directly in check transactions. However, the merchant in purchasing his goods pays for his purchases by check. Also the money paid for the goods by the consumer represents money that has come from pay rolls obtained by check or money obtained directly by cashing a check. Only a relatively small proportion of business done, therefore, actually escapes being evidenced in checks cashed in one way or another.

The state of business and relative activity for any city or for the country as a whole at any time may be judged by comparing the checks cashed during recent months with the same months of the year previous and with corresponding months for a few years past, particularly past years that are considered to have been normal. A chart of checks cashed for the United States is shown below. Checks cashed for New York are excluded from this chart for the reason that a large proportion of checks cashed in New York City represents financial rather than trade transactions.



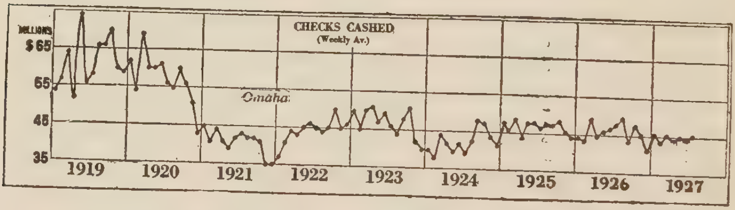
As the chart shows, business after reaching a high level in 1920 reacted sharply in 1921. Since then, business has risen more or less steadily, being better in 1926 and 1927 than in any preceding period.

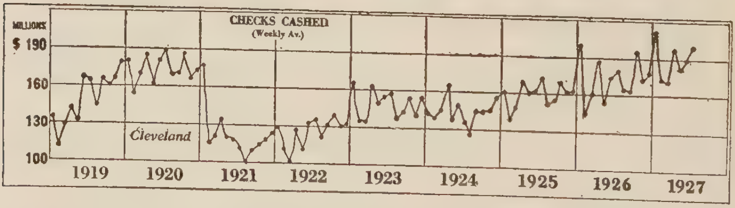
In considering a chart such as that above, in which the actual figures of checks cashed are plotted, several factors must be taken into consideration in judging the condition of business. The first of these factors is seasonal variation. If the above chart is studied closely, it will be found that August of each year is a low month. Because of this fact, it is not proper to compare the August figure with that for July and conclude that business is poor. The proper procedure is to compare the checks cashed for August with those for August of the preceding and other years. A direct comparison with the preceding year is afforded by plotting the data of checks cashed in the manner employed in the chart below.



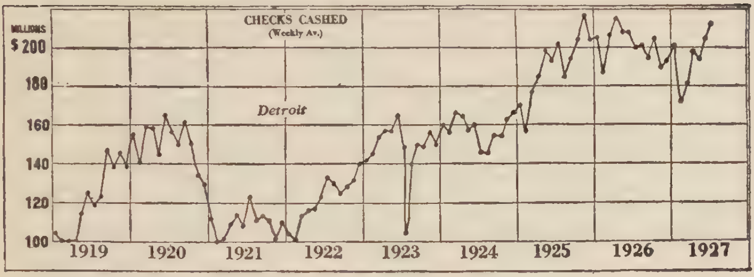
Another factor to consider in connection with any chart of checks cashed such as the one on page 227 is that of the relative price level in different years. For instance, in that chart business in 1923 would appear to have been at about the same level as in 1920. However, the general average level of prices in 1920 was much higher than in 1923. Expressed in terms of percentage of 1914 prices, the general average level of prices in 1920 as measured by the United States Bureau of Labor Statistics Index was 226 as compared with 154 in 1923. Thus, a dollar of business transacted in 1923 represented on the average about 46 per cent more of merchandise moved than did a dollar of business in 1920. Consequently, business in 1923, though appearing in the chart to have been not much larger than in 1920, was in fact very much larger when considered from the standpoint of total merchandise sold. Only once every generation or two is there any such wide change in the general level of prices as occurred in the years during and immediately after the War. Ordinarily, the change in the general price level from one year to another will be so small as not to affect the value of a direct comparison of checks cashed such as is made in the chart on page 228.

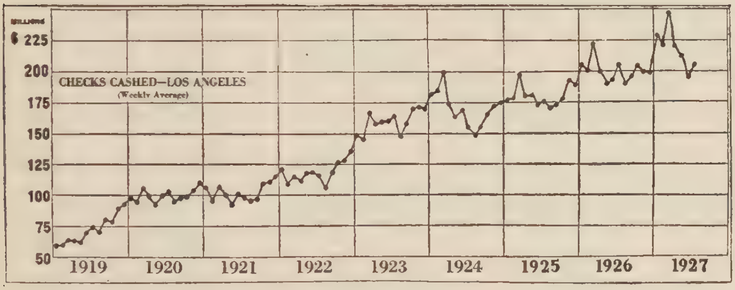
Still another factor to consider in a chart of the actual data of checks cashed is that of growth. *Normally, the volume of checks cashed should show an increase from one year to another.* For the United States this normal growth amounts to about 6.5 per cent. Consequently, if a comparison of the data of checks cashed, such as is made in the chart on page 228, shows those for the current year to be 6.5 per cent or more above those for the preceding year, we may conclude that business is good, whereas *if the* *volume of checks is only about equal to that of the preceding year, business could be considered to be only fair.* If the volume of checks cashed is smaller than in the preceding year, one would conclude that business is poor. From the chart on page 228 it is evident that business in the United States during 1926 was very good. In a comparison with a preceding year some allowance must, of course, be made if this preceding year was one of unusual prosperity or of severe depression. For instance, such an allowance would have to be made in comparing the year 1925 with 1921 or in comparing 1923 with 1922.





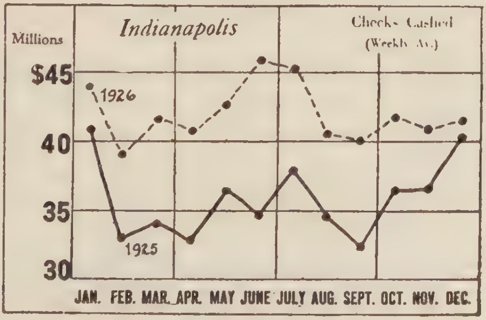
Detroit, Los Angeles, Cleveland and Omaha have fared quite differently since the 1919–1920 boom period. Omaha has failed to recover to the 1919–1920 levels. In Cleveland recovery since 1921 has been

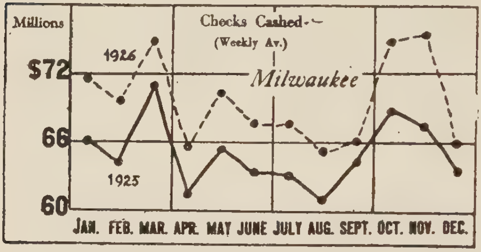


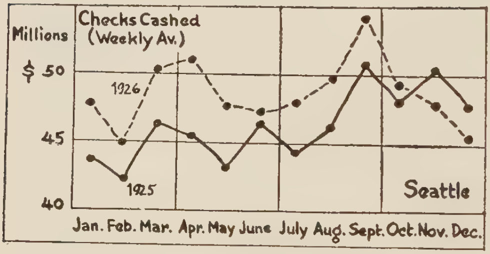


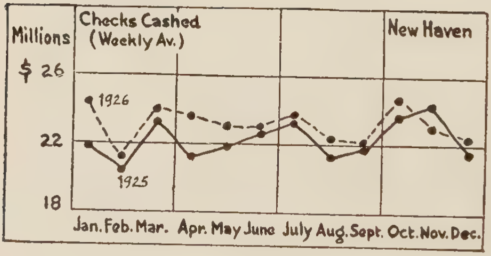
reasonably good. Detroit and Los Angeles have experienced excellent recovery from 1921.

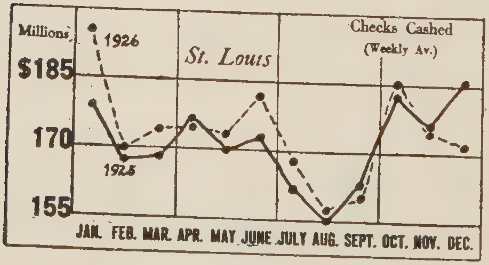
The charts for Indianapolis, Milwaukee and Seattle show graphs for cities in which business during 1926 was very good. In New Haven and St. Louis business was only fair. Duluth is illustrative of a city in which business in 1926 was





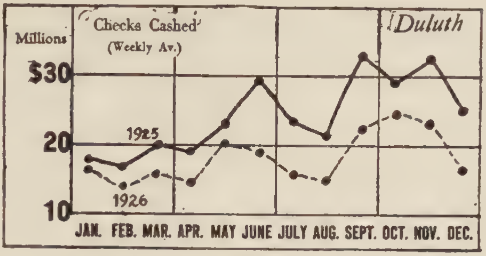


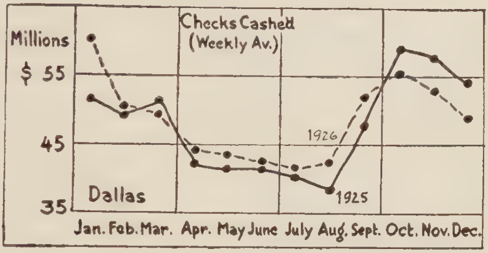


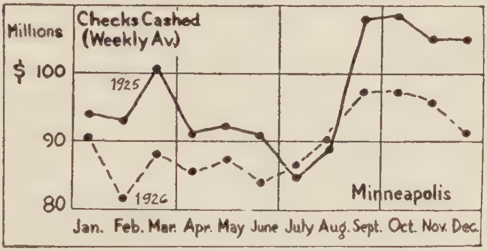


poor. The charts for Dallas and Minneapolis are for cities in which checks cashed show a very pronounced seasonal movement. These sharp seasonal movements are brought about in each case by some annual event. In Minneapolis, for instance, the rise in the fall is caused by the heavy marketing of grain coincident with harvesting.

A refinement in the data of checks cashed which proves helpful in judg-

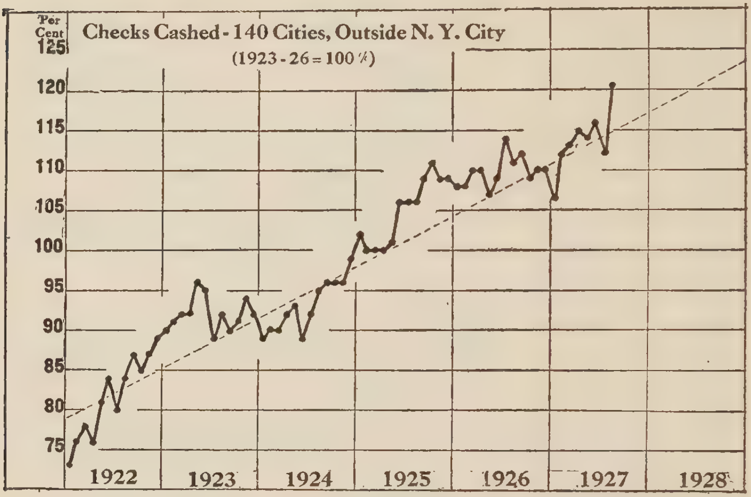






ing the position of business is *the elimination of seasonal variation* and the reduction of the data to an index. If the seasonal variation is removed from a series of data, any given month may be compared with a preceding month to observe whether business has fallen or risen. If, for instance, it is found that January is on the average 10 per cent below February, then in any given year, if the February data are reduced by 10 per cent, they may be compared with January to observe whether business was really better or worse. Seasonal variation has been eliminated from the data in the accompanying chart.

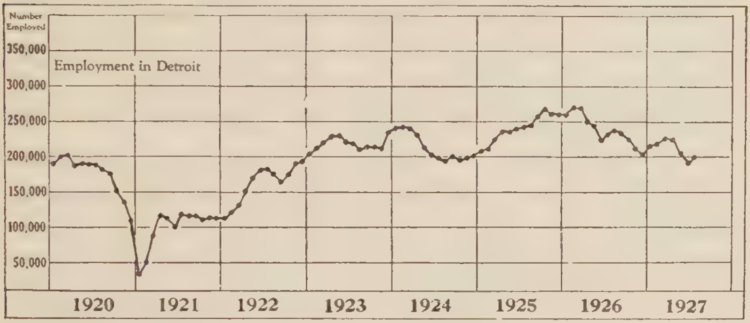
This chart was begun with 1922, since the preced-



ing years were abnormal, representing post-war readjustments. To aid in showing the position of business, a trend line has been placed through the data. It will be noted that 1922 and the last half of 1924 were subnormal periods, while 1923, 1925, and 1926 were above normal.

### Employment Statistics

A second index of local business conditions is employment. Employment statistics are available for a number of cities such as Detroit, Cleveland, Toledo, the larger cities in Illinois, and also for some states. It is probable that Chambers of Commerce or other organizations will gradually increase the extent of local employment statistics so that ultimately the data will be available for a much larger number of cities than at present. A chart of employment for Detroit appears below.



Data showing the number of persons registering for employment and the number placed are compiled by the United States Department of Labor in a monthly bulletin entitled *Monthly Report of Activities of State and Municipal Employment Services.* These data, however, are not as satisfactory as those for the actual number of persons employed. Another bulletin is the *Industrial Employment Information Bulletin,* also issued by the Department of Labor.

## Sectional Credit and Sales Conditions

The first step in determining the sectional business outlook is to divide the country into sections in which the same economic factors operate more or less in determining local prosperity. Thus, the economic characteristics of the different states in New England are sufficiently similar to warrant grouping these states together as one section. Prosperity in the New England states depends primarily upon activity and employment in the cotton and woolen textile industries, on metal products and machinery manufacturing, and upon the shoe and leather industry.

In any division of the country into sections, the division must, of course, be arbitrary to a certain extent, since no one state is entirely a cotton manufacturing state, a wheat growing state, or a lumber producing state. However, the United States may be divided and the different states may be arranged in accord with the characteristics which are predominant. It is possible to divide the country into a larger or smaller number of sections but the following division has been found practical.

- *New England*
  - Maine
  - New Hampshire
  - Vermont
  - Massachusetts
  - Rhode Island
  - Connecticut
- *Middle Atlantic*
  - New York
  - New Jersey
  - Pennsylvania
  - West Virginia
  - Maryland
  - Delaware
  - District of Columbia
- *Great Lakes*
  - Ohio
  - Indiana
  - Illinois
  - Michigan
  - Wisconsin
- *Middle West*
  - Minnesota
  - North Dakota
  - South Dakota
  - Iowa
  - Nebraska
  - Missouri
  - Kansas
  - Oklahoma
  - Montana
  - Wyoming
  - Colorado
- *South*
  - Virginia
  - Kentucky
  - Tennessee
  - North Carolina
  - South Carolina
  - Georgia
  - Florida
  - Alabama
  - Mississippi
  - Arkansas
  - Louisiana
  - Texas
  - New Mexico
- *Pacific Coast*
  - California
  - Oregon
  - Washington
  - Idaho
  - Nevada
  - Utah
  - Arizona

Having divided the states on the basis of their economic similarity, a forecast of the outlook for business in each of the different sections is made by considering the outlook for each of the dominating industries in the section and considering what buying power these industries will provide. In addition, as a check upon a forecast derived in this manner, each of the chief cities within any given area may be analyzed to see if the conclusions for the separate cities point to the same general conclusion as does the consideration of the section as a whole.

A general factor which may be studied in analyzing all sections and all cities is building construction. The various departments of building, including residences, office buildings, factories, warehouses, schools, hospitals, churches, highways, and other basic work, employ a very large number of men, so that statistics of new construction work are an important index of the spending power of a considerable section of American workers.

The value of building construction as an index of business activity during coming months lies in the fact that building permits issued or contracts awarded during a current or recent month represent work which will be carried on during the succeeding four to six months or more. Construction work currently begun requires from three months to a year or more for its completion, depending upon the nature of the work. The volume of building permits or of contracts awarded, therefore, forecasts employment and spending power in the construction industry for a period of at least three months in advance.

Building construction may be considered in total, by sections, and for individual cities. In reporting *contracts awarded,* the F. W. Dodge Corporation divides the country into sections. These sections do not coincide exactly with those previously given but coincide closely enough to enable one to know exactly what the building construction situation is in the areas covered by these reports. A satisfactory method for determining the current position of building construction for each of the different sections is to make a direct comparison of current statistics with those for the same period of last year. In the following table, contracts awarded for the year 1926 are compared with those for 1925.

Building Contracts by Districts (Sq. Ft.)
(37 Eastern States)

| District | 1926 | 1925 | Per Cent Change |
|---|---|---|---|
| Boston | 71,200,000 | 83,200,000 | —14.4 |
| New York | 252,600,000 | 252,900,000 | — 0.1 |
| Philadelphia | 97,400,000 | 96,700,000 | + 0.7 |
| Pittsburgh | 87,100,000 | 99,900,000 | —12.8 |
| Chicago | 221,500,000 | 222,800,000 | — 0.6 |
| Minneapolis | 16,000,000 | 17,300,000 | — 7.5 |
| Southeastern | 98,500,000 | 126,500,000 | —22.1 |
| Texas | 39,400,000 | 36,900,000 | + 6.8 |
| Total | 883,700,000 | 936,200,000 | — 5.7 |

The states included in each of the districts listed above are as follows:

*Boston*—Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut.

*New York*—New York State and northern New Jersey.

*Philadelphia*—Eastern Pennsylvania, southern New Jersey, Maryland, Delaware, District of Columbia, Virginia.

*Pittsburgh*—Western Pennsylvania, West Virginia, Ohio and Kentucky.

*Chicago*—Illinois, Indiana, Iowa, Wisconsin, Michigan, Missouri, Kansas, Nebraska and Oklahoma.

*Minneapolis*—Minnesota, North Dakota, South Dakota, northern Michigan.

*Southeastern*—North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Tennessee, Arkansas, Louisiana.

*Texas*—The State of Texas.

*Building permits* are reported each month by a number of sources, the best being Bradstreet's *Journal* and S. W. Straus and Company. The reports in each case cover individual cities. By comparing current building permits with those for the same period of the previous and preceding years, the present position of building construction may be determined. Individual cities may be studied separately, and by combination of the cities the situation for separate states and for sections may be determined. It is generally better in the case of building permits to take at least a three-month total in making comparisons, since considerable fluctuation frequently occurs from one month to another.

## New England

Every two years the United States Bureau of the Census issues a census of manufactures covering the manufacturing activities of the country. In this census there are available analyses showing for each state the relative importance of each of the different industries in the state, the more important industries located in the large cities, and for each industry of the country the order of importance of the different states in that industry. Among the other information contained in the census the most significant is that of the number of persons engaged in the different industries and the total of salaries and wages paid. Either of these or both may be used as a criterion of the importance of each of the different industries in the prosperity of any given state or city.

The latest available census of manufactures shows a total number of employes in the six New England States of 1,418,000. An analysis of the total number of employes shows about 62 per cent to be engaged in four leading industries, the remainder of the employes being scattered over a very large number of other industries. The leading industries in New England, as indicated by the number of employes, are given in the accompanying table.

Leading Industries in New England

| Industry | No. of Employes | Total for New England |
|---|---|---|
| Metal products & machinery ... | 338,000 | 23.8 |
| Cotton goods .................. | 240,000 | 16.9 |
| Woolen and worsted ........... | 151,000 | 10.7 |
| Shoes and leather ............ | 150,000 | 10.6 |
| Total................ | 879,000 | 62.0 |

Since the four industries listed above are the leading ones, an analysis of their condition and outlook gives a satisfactory basis for forecasting business conditions in this section. The remainder of the industries in the section, which employ about 38 per cent of the total number of employes, also has an effect upon business. But the minor industries in any section generally follow along with the leaders. For instance, sales in the baking industry will depend upon employment and wages in other lines, particularly the leading ones.

In considering the outlook for a given industry, numerous factors must be taken into account and different sources consulted. In an industry where the cost of the raw materials is an important part of the price of the finished product, it is necessary in forecasting the industry to have in mind the outlook for the prices of the raw materials in question. If the outlook for the raw materials is for prices to decrease, it is fairly certain that prices for the finished goods of the industry will decline, and in a period of declining prices merchants will generally purchase on a hand-to-mouth basis.

Of the leading industries in New England, the raw material cost is an important item in cotton goods, in woolen and worsted goods, and in the shoe and leather industry. Consequently, in forecasting the outlook for these industries, the position of the raw materials must be kept in mind. The manner of determining the price outlook for raw materials is discussed in the sections of this volume dealing with commodity price forecasting.

Referring specifically to the cotton industry, the United States Bureau of the Census issues a cotton report each month which gives the domestic consumption of cotton and another giving cotton spindle activity. These reports are available gratis from the Bureau at Washington. As an index of cotton manufacturing activity, cotton consumption and spindle activity for current months may be compared with preceding months and with the corresponding months of the previous year. The total of cotton consumption for a crop year to date may also be compared with stocks on hand. These data are also given in the cotton report.

Dry-goods sales, when compared with cotton manufacturing activity, are likewise a good index of the outlook for cotton goods manufacturing activity during coming months. The Federal Reserve Board reports each month the percentage change in dry-goods sales as compared with the preceding month and the same month of the preceding year. Also, stocks of dry-goods are reported. If dry-goods sales have been small for a number of months, while manufacturing activity has been heavy, it is a certain indication that an overstocking of cotton goods is occurring, and that curtailment in production will follow. On the other hand, if sales are large and manufacturing activity is slow, increased manufacturing and employment will be witnessed. Another index which may be used is that of the sales and stocks of cotton jobbers in the New York district. This is the largest single cotton goods jobbing center in the country and the statistics for jobbers in this district serve to indicate the condition for the entire trade.

## Middle Atlantic Section

The Middle Atlantic section is primarily an industrial section, and prosperity for this area as a whole depends almost entirely upon industry, agriculture having but a small influence on the total prosperity. Industry in the Middle Atlantic section is widely diversified, there being no one or two industries which occupy a dominating or controlling position. In the table below, the number of employes reported in the census as engaged in the ten leading industries is shown, as well as the percentage of these employe groups to the total in the industry.

Leading Industries in Middle Atlantic Section

| Industry | No. of Employes | Per Cent of Total Employes in Section |
|---|---|---|
| Clothing, men's and women's | 534,000 | 15.3 |
| Foundry and machine shop products | 376,000 | 11.8 |
| Iron and steel | 302,000 | 8.6 |
| Railway car shops | 182,000 | 5.2 |
| Printing and publishing | 151,000 | 4.3 |
| Electrical machinery | 124,000 | 3.5 |
| Knit goods | 110,000 | 3.2 |
| Woolen and worsted | 55,700 | 1.6 |
| Cigars and cigarettes | 51,600 | 1.5 |
| Boots, shoes and leather | 34,700 | 1.0 |
| Total | 1,921,000 | 56.0 |

The number of employes represented by the ten industries listed in the table accounts for 56 per cent of all employes in the section. Since many of the other industries in the section are dependent and related industries, these other industries will tend to follow the same trend as the leading ones, being good when the leading industries are good and poor when the leading industries are slow.

In sections as highly industrialized as the Middle Atlantic section, prosperity in other areas is also an important factor in the local prosperity. The separate states are studied by considering the condition and outlook for the industries in each state.

## South

In the South three factors predominate in determining business prosperity. These are the cotton crop, the tobacco crop and manufacturing. The relative importance of each of these varies with the different states. In some of these states other factors enter. In Texas, for instance, cattle and petroleum are factors. .

The purchasing power in the different southern states resulting from the cotton crop depends upon production and prices. By studying reports and estimates of production and prices, the relative income which the different states will obtain from the crop one year as compared with another may be estimated. Having in mind what business conditions in a given state were during the preceding year, the outlook may be determined by comparing the estimated value of the cotton crop in a current year with that for the preceding year.

In the table below, the value of the cotton crop in 1926 for each of the leading producing states is compared with the same item for 1925.

Cotton Crop

| State | Production—Bales 1926 | 1925 | Estimated Value 1926 | 1925 | Per Cent Change in Value |
|---|---|---|---|---|---|
| Texas | 5,900,000 | 4,163,000 | $319,600,000 | $ 385,000,000 | —17.3 |
| Oklahoma | 1,950,000 | 1,691,000 | 94,600,000 | 143,700,000 | —34.2 |
| Mississippi | 1,930,000 | 1,991,000 | 111,900,000 | 194,100,000 | —42.3 |
| Arkansas | 1,620,000 | 1,600,000 | 89,100,000 | 128,800,000 | —30.8 |
| Alabama | 1,490,000 | 1,357,000 | 79,700,000 | 128,200,000 | —37.9 |
| N. Carolina | 1,250,000 | 1,102,000 | 71,900,000 | 104,700,000 | —31.3 |
| Georgia | 1,164,000 | 1,475,000 | 81,900,000 | 110,600,000 | —26.0 |
| S. Carolina | 1,030,000 | 889,000 | 60,300,000 | 83,500,000 | —27.8 |
| Louisiana | 820,000 | 910,000 | 45,100,000 | 82,400,000 | —45.2 |
| Others | 1,464,000 | 926,000 | 62,200,000 | 103,000,000 | —39.6 |
| Total U. S. | 18,618,000 | 16,104,000 | $1,016,300,000 | $1,464,000,000 | —30.6 |

The tobacco crop is an important factor in only four of the southern states. It is very important in Kentucky and North Carolina, but less so in Virginia and Tennessee. In the table below, the estimated value for 1926 and 1925 are compared.

Tobacco Crop

| State | Production — Lbs. |  | Estimated Value |  | Per Cent Change in Value |
|---|---|---|---|---|---|
|  | 1926 | 1925 | 1926 | 1925 |  |
| N. Carolina | 393,200,000 | 380,200,000 | $103,800,000 | $87,400,000 | +18.8 |
| Kentucky | 374,900,000 | 388,000,000 | 62,100,000 | 69,300,000 | —10.4 |
| Virginia | 132,400,000 | 129,400,000 | 25,400,000 | 20,200,000 | +25.8 |
| Tennessee | 107,000,000 | 94,400,000 | 10,100,000 | 16,000,000 | —36.9 |
| Others | 315,500,000 | 385,000,000 | 43,800,000 | 57,900,000 | —24.8 |
| Total | 1,323,000,000 | 1,377,000,000 | $245,200,000 | $250,800,000 | — 2.2 |

For Texas, the factors of petroleum and cattle are given consideration by reference to prices and sales or production. Cattle prices, as well as sales, are reported regularly each week in *Crops and Markets,* a publication of the United States Department of Agriculture. Petroleum statistics are published in the numerous petroleum trade journals and are also issued by the United States Geological Survey and the American Petroleum Institute. The reports of the Geological Survey and of the American Petroleum Institute are the most widely used and may be obtained from these organizations.

The only industries of importance in the South, considered as a whole, are those involving lumber products, cotton goods, railway car repairing and tobacco products. The number of employes reported in the census for the states included in the South totals 1,313,000. Of these, the four leading industries employ approximately 54 per cent. The number of employes in each of the four leading industries and the percentage which these employes are of the total for the section are shown in the following table.

Leading Industries in South

| Industry | No. of Employes | Per Cent of Total for Section |
|---|---|---|
| Lumber products | 306,000 | 23.3 |
| Cotton goods | 243,000 | 18.5 |
| Railway car repairs | 110,000 | 8.4 |
| Tobacco products | 46,000 | 3.5 |
| Total | 705,000 | 53.7 |

## Great Lakes States

An analysis of business in the Great Lakes States resolves itself into the study of two factors: (1) industry and (2) crops. The first of these two factors is the more important since over 60 per cent of the population in this section lives in cities and is therefore dependent upon industrial activities.

The key to the industrial situation for the section as a whole is found by analyzing separately the leading industries for each of the states. From the Census of Manufactures, the following data with reference to Ohio are found.

Leading cities such as Chicago, Detroit and Cleve-

Industrial Employment in Ohio, 1923

| Industry | Number of Employes | Per Cent of Total |
|---|---|---|
| Iron and steel | 129,528 | 15.9 |
| Foundry and machine shop products | 126,761 | 15.5 |
| Rubber tires and goods | 55,023 | 6.7 |
| Motor vehicles and parts | 54,553 | 6.6 |
| Railway car shops | 41,463 | 5.1 |
| Electrical products | 33,865 | 4.1 |
| Clay products and pottery | 33,232 | 4.1 |
| Printing and publishing | 26,808 | 3.3 |
| Clothing | 24,365 | 3.0 |
| Boots, shoes and leather | 17,979 | 2.2 |
| Others | 274,238 | 33.5 |
| Total | 817,815 | 100.0 |

land form pivotal points in the trade of many manufacturers and dealers, and separate analyses for cities such as these are frequently desired by the national distributor planning a local campaign and by others making a study of local possibilities. In the accompanying table, the distribution of employes according to the leading industries is given for three leading centers.

Number of Employes in Leading Industries

Chicago

| Industry | Employes | Per Cent of Total |
|---|---|---|
| Foundry and machine shop products | 39,326 | 10.2 |
| Clothing | 37,765 | 9.8 |
| Railways car shops | 34,556 | 8.9 |
| Slaughtering and packing | 30,382 | 7.9 |
| Iron and steel products | 17,269 | 4.5 |
| Electrical products | 16,777 | 4.3 |
| Others | 209,610 | 54.4 |
| Total | 385,685 | 100.0 |

Detroit

| | | |
|---|---|---|
| Motor vehicles and parts | 72,992 | 42.6 |
| Foundry and machine shop products | 21,153 | 12.4 |
| Others | 76,880 | 45.0 |
| Total | 171,025 | 100.0 |

Cleveland

| | | |
|---|---|---|
| Foundry and machine shop products | 28,721 | 20.3 |
| Iron and steel products | 19,955 | 14.1 |
| Motor vehicles and parts | 18,441 | 13.0 |
| Clothing | 11,565 | 8.2 |
| Others | 62,966 | 44.4 |
| Total | 141,648 | 100.0 |

The agricultural situation in the Great Lakes States, while not as important to the total prosperity as in the purely agricultural states, always deserves careful analysis. The chief crops are wheat, corn and hogs. The manner of making comparisons is indicated in the table following:

1925 and 1926 Wheat Crop in Great Lakes States

| | Production Bushels | | Estimated Value | | Per Cent Change in |
|---|---|---|---|---|---|
| State | 1926 | 1925 | 1926 | 1925 | Value |
| Illinois | 41,030,000 | 36,880,000 | $55,300,000 | $50,100,000 | +10.4 |
| Ohio | 40,380,000 | 24,300,000 | 51,300,000 | 38,400,000 | +33.6 |
| Indiana | 34,050,000 | 25,700,000 | 42,200,000 | 39,800,000 | + 6.0 |
| Michigan | 18,000,000 | 14,560,000 | 21,960,000 | 22,710,000 | — 3.3 |
| Wisconsin | 2,600,000 | 2,270,000 | 3,260,000 | 3,080,000 | + 5.8 |

Value of Corn Crop in Great Lakes States

| State | 1926 | 1925 | Per Cent Change |
|---|---|---|---|
| Illinois | $175,300,000 | $228,800,000 | —23.4 |
| Ohio | 87,300,000 | 102,400,000 | —14.8 |
| Indiana | 85,300,000 | 111,800,000 | —23.7 |
| Wisconsin | 54,800,000 | 73,200,000 | —25.3 |
| Michigan | 39,500,000 | 49,300,000 | —24.6 |

Hogs on Farms in Great Lakes States

| State | Number Jan. 1, 1927 | Number Jan. 1, 1926 | Value Jan. 1, 1927 | Value Jan. 1, 1926 | Per Cent Change in Value |
|---|---|---|---|---|---|
| Illinois ....... | 4,440,000 | 4,440,000 | $75,510,000 | $73,290,000 | + 8.0 |
| Indiana ...... | 2,760,000 | 2,820,000 | 46,990,000 | 44,270,000 | + 6.1 |
| Ohio ......... | 2,440,000 | 2,490,000 | 41,460,000 | 37,340,000 | +11.0 |
| Wisconsin .... | 1,590,000 | 1,660,000 | 27,100,000 | 27,560,000 | — 1.7 |
| Michigan .... | 750,000 | 730,000 | 13,110,000 | 11,780,000 | +11.3 |

## Middle West

The wheat crop is harvested in two parts, winter wheat and spring wheat. Winter wheat is wheat which is planted late in the fall, and which begins to come to harvest about July 1 of the succeeding year. It is grown largely in the southerly states of the Middle West. Spring wheat is planted in the spring and comes to harvest after winter wheat. It is grown largely in the northerly states of this section.

The following table shows the distribution of the 1926 wheat crop in the Middle West, for both winter and spring wheat.

1926 Wheat Crop in Middle West—Bushels

| State | Winter Wheat | Spring Wheat | Total |
|---|---|---|---|
| Kansas .................. | 150,060,000 | 30,000 | 150,090,000 |
| North Dakota .......... | ...... | 77,200,000 | 77,220,000 |
| Oklahoma ............... | 73,750,000 | ...... | 73,750,000 |
| Montana ................ | 6,270,000 | 38,390,000 | 44,660,000 |
| Nebraska ............... | 37,170,000 | 2,920,000 | 40,090,000 |
| Minnesota ............... | 3,270,000 | 24,590,000 | 27,860,000 |
| Missouri ................ | 21,280,000 | 190,000 | 21,470,000 |
| Colorado ................ | 14,480,000 | 3,970,000 | 18,450,000 |
| South Dakota ........... | 530,000 | 10,320,000 | 10,850,000 |
| Iowa ..................... | 7,310,000 | 550,000 | 7,860,000 |
| Wyoming ................ | 760,000 | 2,620,000 | 3,380,000 |

The important winter wheat states are Kansas, Oklahoma, Nebraska and Missouri. The important spring wheat states are North Dakota, Montana, Minnesota and South Dakota. A comparison of the total 1925 and 1926 crop returns for each state is made below.

1925 and 1926 Wheat Crop in Middle West

| State | Production—Bushels | | Estimated Value | | Per Cent Change in Value |
|---|---|---|---|---|---|
| | 1926 | 1925 | 1926 | 1925 | |
| Kansas ...... | 150,090,000 | 77,390,000 | $178,600,000 | $114,500,000 | + 55.9 |
| North Dakota | 77,220,000 | 112,380,000 | 90,400,000 | 147,200,000 | — 38.6 |
| Oklahoma .... | 73,750,000 | 27,190,000 | 87,000,000 | 40,000,000 | +117.5 |
| Montana ..... | 44,660,000 | 35,020,000 | 50,100,000 | 48,800,000 | + 2.7 |
| Nebraska .... | 40,090,000 | 34,150,000 | 46,800,000 | 47,900,000 | — 2.3 |
| Minnesota ... | 27,860,000 | 30,270,000 | 34,200,000 | 41,400,000 | — 17.4 |
| Missouri ..... | 21,470,000 | 22,520,000 | 26,600,000 | 33,800,000 | — 21.3 |
| South Dakota | 10,850,000 | 31,840,000 | 12,800,000 | 40,700,000 | — 68.5 |
| Other Sections | 386,310,000 | 305,670,000 | 471,100,000 | 443,600,000 | + 6.2 |
| Total U. S. | 832,300,000 | 676,430,000 | $997,600,000 | $957,900,000 | + 4.2 |

The corn crop is the largest single crop in the country. Comparative values for 1926 and 1925 are shown in the table following. About 37 per cent of the country's corn crop is produced in six middle-western states, the balance of production being distributed over the country.

Value of Corn Crop in Middle West

| State | 1926 | 1925 | Per Cent Change |
|---|---|---|---|
| Iowa ................ | $ 231,600,000 | $ 275,900,000 | —16.0 |
| Missouri ............ | 118,400,000 | 137,200,000 | —13.7 |
| Nebraska ............ | 94,800,000 | 144,300,000 | —34.3 |
| Minnesota .......... | 82,700,000 | 83,400,000 | — 0.8 |
| South Dakota ........ | 46,300,000 | 47,000,000 | — 1.5 |
| Kansas ............. | 40,100,000 | 72,600,000 | —44.8 |
| Other Sections ...... | 1,089,500,000 | 1,206,400,000 | — 9.7 |
| Total U. S. ....... | $1,703,400,000 | $1,966,800,000 | —13.4 |

The corn crop is marketed largely, not in the form of grain, but in the form of hogs and cattle so that it is as essential to consider hogs as it is to consider corn.

Hogs on Farms

| State | Number Jan. 1 1927 | Number Jan. 1 1926 | Value Jan. 1 1927 | Value Jan. 1 1926 | Per Cent Change in Value |
|---|---|---|---|---|---|
| Iowa ....... | 9,530,000 | 9,630,000 | $166,780,000 | $163,760,000 | + 1.8 |
| Nebraska ... | 4,510,000 | 4,700,000 | 78,960,000 | 80,840,000 | — 2.3 |
| Missouri .... | 3,710,000 | 3,670,000 | 57,470,000 | 48,820,000 | +17.7 |
| Minnesota ... | 3,530,000 | 3,460,000 | 61,690,000 | 60,480,000 | + 2.0 |
| South Dakota | 2,180,000 | 2,300,000 | 37,110,000 | 37,950,000 | — 2.2 |
| Oklahoma .... | 780,000 | 740,000 | 11,270,000 | 8,690,000 | +29.7 |
| North Dakota | 640,000 | 680,000 | 10,480,000 | 11,250,000 | — 6.9 |
| Other Sections | 27,660,000 | 26,880,000 | 414,660,000 | 379,840,000 | + 9.2 |
| Total U. S. | 52,540,000 | 52,060,000 | $838,420,000 | $791,630,000 | + 5.9 |

The Middle West is an important cattle breeding area. The distribution and value of cattle on farms for this region are shown in the table below as of January 1, 1927, and January 1, 1926.

Cattle on Farms, Middle West

| State | Number Jan. 1 1927 | Number Jan. 1 1926 | Value Jan. 1 1927 | Value Jan. 1 1926 | Per Cent Change in Value |
|---|---|---|---|---|---|
| Iowa ........ | 4,030,000 | 4,240,000 | $190,060,000 | $187,740,000 | + 1.2 |
| Nebraska .... | 2,870,000 | 3,190,000 | 116,420,000 | 118,080,000 | — 1.4 |
| Minnesota ... | 2,740,000 | 2,850,000 | 125,170,000 | 123,110,000 | + 1.7 |
| Kansas ...... | 2,630,000 | 2,850,000 | 102,130,000 | 102,540,000 | — 0.4 |
| Missouri ..... | 2,300,000 | 2,370,000 | 89,010,000 | 86,850,000 | + 2.5 |
| South Dakota | 1,730,000 | 1,920,000 | 64,090,000 | 65,620,000 | — 2.3 |
| Oklahoma ... | 1,720,000 | 1,610,000 | 55,460,000 | 43,910,000 | +26.3 |
| Colorado .... | 1,390,000 | 1,380,000 | 50,920,000 | 45,260,000 | +12.5 |
| Montana ..... | 1,190,000 | 1,280,000 | 41,110,000 | 40,920,000 | + 0.5 |
| North Dakota | 1,150,000 | 1,260,000 | 39,320,000 | 41,290,000 | — 4.8 |
| Wyoming .... | 770,000 | 790,000 | 30,660,000 | 27,500,000 | +11.5 |
| Other Sections | 35,000,000 | 35,410,000 | 1,526,240,000 | 1,407,800,000 | + 8.4 |
| Total U. S. | 57,520,000 | 59,150,000 | $2,430,590,000 | $2,290,620,000 | + 6.1 |

The number of cattle on farms on January 1, 1927, was smaller than the number on January 1, 1926. The value, however, was higher. By considering separately the important factors which affect each state in the Middle West, the outlook for that state may be forecast as may also the outlook for the section as a whole.

The most doubtful period as to farm prospects during the year is in the crop growing season. Not until crop harvesting is well under way is there sufficient certainty with regard to production and prices to indicate definitely how large the farm income will be.

## Pacific Coast

On the Pacific Coast, crops and lumber largely determine the fortunes of business enterprise. The lumber industry alone employs one-third of all employes reported for the states of California, Washington and Oregon as is evident from the table which follows:

Industrial Employment in California, Washington and Oregon

| Industry | Number of Employes | Per Cent of Total |
|---|---|---|
| Lumber and lumber products .......... | 166,253 | 33,2 |
| Railway car shops .................... | 52,207 | 10.4 |
| Foundry and machine shop products .... | 39,962 | 8.0 |
| Canning and preserving ............... | 29,326 | 5.8 |
| Others ............................... | 213,823 | 42.6 |
|  | 501,571 | 100.0 |

An index to the condition of this industry is found in statistics of building construction, since changes in the lumber industry must follow closely upon the heels of changes in new building.

In California the fruit and field crops yield large revenues, and must be considered as an important factor in the buying power of the state. A study of statistics during the growing season serves as a basis for forecasting the purchasing power which farmers will enjoy. Crop reports are issued regularly by the California Department of Agriculture at Sacramento.

California Crops
(Thousands)

Fruit Crops

| Crop | Unit | Production 1926 | Production 1925 | Values 1926 | Values 1926 | Per Cent Change |
|---|---|---|---|---|---|---|
| Oranges | Box | 29,100 | 24,800 | $87,300 | $70,400 | +24.0 |
| Grapes | Ton | 1,026 | 1,112 | 32,800 | 38,000 | —13.7 |
| Raisins | Ton | 272 | 200 | 21,800 | 16,000 | +36.3 |
| Peaches | Ton | 541 | 394 | 21,100 | 14,200 | +48.6 |
| Lemons | Box | 7,200 | 7,100 | 14,400 | 15,100 | — 4.6 |
| Others | — | —— | —— | 57,600 | 65,200 | —11.6 |
| Total | | | | $235,000 | $218,900 | + 7.4 |

Field Crops

| Crop | Unit | Production 1926 | Production 1925 | Values 1926 | Values 1926 | Per Cent Change |
|---|---|---|---|---|---|---|
| Hay | Ton | 4,980 | 5,420 | $61,300 | $75,800 | —19.1 |
| Barley | Bu. | 32,400 | 32,550 | 18,800 | 24,400 | —23.0 |
| Beans | Bu. | 5,740 | 4,560 | 17,200 | 18,700 | — 8.0 |
| Wheat | Bu. | 12,000 | 11,500 | 15,600 | 17,000 | — 8.2 |
| Other | — | —— | —— | 45,100 | 55.900 | —19.3 |
| Total | | | | $158,000 | $191,800 | —17.6 |
| Vegetable crops | | | | $60,200 | $55,200 | + 9.0 |
| Total all crops | | | | $453,200 | $465,900 | — 2.7 |

In Oregon wheat is a factor in buying power and in Washington wheat and apples are factors. Crop incomes in these two states, however, form only a restricted part of total income when compared with that of the lumber and lumber products industries.

## Checking the Forecast

As a check upon the outlook for business in any given section it is desirable to weigh the favorable and unfavorable local factors against the trend for the country as a whole by considering the effects of business in other parts of the country upon local conditions.

No one section of the country is wholly self-sustaining since each section consumes products from practically all of the other sections, and business in any given section, particularly in the industrial sections, will depend in a considerable measure upon the situation in the remainder of the country. If the outlook for a given section is somewhat unfavorable but prosperity is general in the remainder of the country, one may count on the fact that conditions in the remainder of the country will tend to buoy up business in the section in question and to offset the unfavorable factors present unless these are important.

## The Analysis of Individual Cities

The analysis of the leading industries in any city may proceed along the same lines outlined for individual states, that is, the data may be obtained from the census. However, cities will vary in type, and for the business outlook it is essential to consider the commercial and industrial character of the city. The intensity of the business movement in any community will be affected by the nature of local industry and by how well diversified local industry is.

Cities will vary in character from "one-industry towns" to those in which a wide diversification exists. A few illustrations may be cited. Outstanding examples of one-industry towns are Fall River and New Bedford, Massachusetts. A study of the census data of New Bedford reveals the following:

Leading Industries in New Bedford

| Industries | No. of Employes | Per Cent of Total |
|---|---|---|
| Cotton goods | 31,955 | 84 |
| Other | 5,962 | 16 |
| Total | 37,917 | 100 |

A number of the one-industry cities in the United States are listed below with the name of the dominating industry.

One-Industry Towns

| Town | Industry |
|---|---|
| Akron, Ohio | Rubber goods |
| Birmingham, Ala. | Iron and steel |
| Detroit, Mich. | Automobiles |
| Erie, Pa. | Foundry and machine shop products |
| Grand Rapids, Mich. | Furniture |

| | |
|---|---|
| Lowell, Mass. | Cotton goods |
| New Bedford, Mass. | Cotton goods |
| Pittsburgh, Pa. | Iron and steel |
| Savannah, Ga. | Naval stores |
| Waterbury, Conn. | Brass and copper products |
| Youngstown, Ohio | Iron and steel |

There are also many two-industry towns such as the following:

Two-Industry Towns

| Town | Industry |
|---|---|
| Albany, N. Y. | Railway car repairing and shirts |
| Lynn, Mass. | Shoes and electrical machinery |
| Schenectady, N. Y. | Electrical machinery and locomotives |
| Scranton, Pa. | Coal mining and silk goods |

Of cities in which industry is diversified, there are many, though relatively few have an ideal diversification. A good example of diversification is found in Boston:

Leading Industries in Boston

| Industry | Number of Employes | Per Cent of Total |
|---|---|---|
| Clothing and knit goods ... | 11,748 | 14.3 |
| Shoes and leather ........ | 7,817 | 9.4 |
| Printing ................. | 6,546 | 7.9 |
| Foundry and machine shop products ............... | 6,401 | 7.7 |
| Bread and other bakery products ............... | 2,878 | 3.5 |
| Electrical machinery ...... | 2,518 | 3.1 |
| Tobacco products ......... | 1,591 | 1.9 |
| Steam fittings ............ | 1,588 | 1.9 |
| Musical instruments ....... | 1,525 | 1.8 |
| Other .................... | 40,366 | 48.5 |
| | 82,978 | 100.0 |

During periods of reaction in any given industry such as the cotton goods industry, for instance, cities depending upon that one industry only will suffer severely, and such has been the case in cities like Lowell, Fall River and New Bedford when cotton goods buying has declined. Two-industry towns are usually in a somewhat better position, since both industries will ordinarily not suffer to the same extent at the same time. In one- and two-industry towns, however, it is difficult for retail merchants to extend credit to customers since collections in depression periods are generally only possible in the distant future and involve a large percentage of loss.

In a city where industry is well diversified, the insurance principle will generally operate, that is, while one or two industries may show a marked decline, others will be above the average, so that considered in total the purchasing power of the city will decline far less than in places where a falling off in orders in one or two industries brings a great slackening in trade.

Another type of city which differs from the industrial city is the distributive center. Distribution centers are located throughout the West and South and find their chief business in supplying goods to the agricultural sections. Cities of this type are Duluth, Minneapolis, Des Moines, Wichita, Oklahoma City, Jacksonville, New Orleans and San Antonio. Numerous cities, such as Chicago, Los Angeles, San Francisco, Portland (Oregon) and Seattle, are producing as well as distributing centers. In a purely distributing center, prosperity depends, of course, upon prosperity in the area which the city serves.

In any consideration of the business outlook, an intimate knowledge of the commerce and industry of each city is thus obviously important in order to provide a proper perspective. In studying any city, however, census statistics should not be considered alone, since in some cases the census will show relatively few persons employed in the industries which are really the most important. This is the case, for instance, in Savannah, where the naval stores industry is the most important, and yet this is not reported in the census for the reason that the individual establishments are small and so many of those engaged in the business are in the business on their own account, rather than as employes. Likewise, in distributing centers, the few small industrial enterprises are no real gauge to the prosperity of the city, which comes from trading rather than producing.

## Determining Conditions in Individual Cities from Conditions in Basic Industries

In credit and sales forecasting, as before indicated, the individual states and cities are studied, each as a unit, by reference to statistics and facts concerning the city or state. Since, in doing this, one will need to keep advised as to the outlook for the individual industries, a reverse process may be followed with profit in determining conditions for some cities. In other words, knowing conditions in any given industry, the outlook for cities in which that industry is the leading or an important one may be inferred. This, however, requires a knowledge of which are the leading producing cities for any given line. A study of individual industries will determine this.

Some of the leading cities for a number of different industries are indicated below:

*Iron and Steel*

Pittsburgh
Chicago
Youngstown
Cleveland
Canton
Buffalo
Birmingham

*Automobiles*

Detroit
Flint
Indianapolis
Toledo
South Bend
Kenosha

*Foundry & Machine Shop Products*

Newark
Syracuse
Buffalo
Cleveland
Erie, Pa.
Philadelphia

*Electrical Machinery*

Schenectady
Lynn, Mass.
Pittsfield
Pittsburgh
Cleveland
Chicago

*Cotton*

Lowell
New Bedford
Fall River
Charlotte, N. C.
Greenville, S. C.

*Clothing*

New York
Chicago
Philadelphia
Baltimore
Rochester

*Silk*

Paterson
Scranton

*Shoes*

Lynn, Mass.
Brockton
Haverhill
Milwaukee
St. Louis

*Slaughtering and Packing*

Chicago
Sioux City
St. Paul
Omaha
Kansas City
St. Joseph
Fort Worth

*Naval Stores*

Savannah
Jacksonville
Pensacola

*Rubber Goods*

Akron

A knowledge of the trend and outlook for an industry may also throw light upon the outlook for an entire state or section. Conditions in the lumber industry, for instance, are an index of business for the states of Oregon and Washington.

## Broad Economic Changes or Economic Evolution

Broad economic changes are always an important factor to be noted and watched in any section, particularly by business men located in the section. Broad changes are so subtle and so gradual that they are hardly noticed and business men will frequently look for other causes for changed business conditions when the slow but certain workings of broad changes is the real basic cause.

One of the most notable and outstanding economic shifts which has been in progress for the last twenty years is that in the cotton goods industry. This industry has been gradually leaving New England to establish itself in the South. This trend is shown unmistakably in the following table.

| Year | Percentages of Total Cotton Consumed in: Cotton Growing States | Percentages of Total Cotton Consumed in: Other States | Per Cent Shift from North to South |
|---|---|---|---|
| 1899 | 39.3 | 60.7 | .. |
| 1905 | 48.4 | 51.6 | 9.1 |
| 1910 | 50.0 | 50.0 | 1.6 |
| 1915 | 55.0 | 45.0 | 5.0 |
| 1920 | 60.2 | 39.8 | 5.2 |
| 1925 | 69.7 | 30.3 | 9.5 |

At the beginning of the present century about 40 per cent of the total cotton consumed in the United States was consumed in the South. At present nearly 70 per cent is consumed there. The movement to the South has proceeded so quietly that it was a considerable time before most manufacturers realized that a definite shift was occurring, and even at present some business men in cotton centers who are experiencing difficulty are confused as to the real reason.

During periods of business activity the hope is always revived that the tide of the movement to the South has been stemmed. Such prospects, however, have not yet been evident in cotton statistics.

The movement toward the South has, of course, been brought about by the economic advantages which the South has had to offer. Among the chief reasons for the southward movement of the cotton goods industry are cheap labor, nearness to the source of raw material, low fuel costs and the presence of the proper humidity necessary to the most successful spinning of cotton.

Another prominent example of a broad economic change is that which occurred in southern California in the period of 1921 to 1924. Growth, which had been rapid here for many years, was greatly accelerated after 1920 due primarily to the finding and development of new oil fields. This boom brought many rapid changes, afforded many speculative possibilities and presented opportunities for profit by which every business man doing business in the section should have permanently bettered himself. The California boom received a set-back in 1924, but growth nevertheless has been more rapid than at any time up to the close of the War. Such growth will undoubtedly continue in this section for some years and as long as it does, better opportunities will be experienced and a smaller effect will be felt from any decline in the business cycle than will be seen in other parts where growth is slower or where a retrogressive movement is in progress.

Rapid growth in any section has the effect of cushioning the bottom of any decline in the business cycle and of accentuating the prosperity peaks.

Other examples of broad economic changes are that which occurred in Florida during the land boom there in 1924–1925, the rapid development which has been caused at such places as Detroit and Cleveland by the rise of the automobile industry, and the expansion resulting from growth in the steel industry at points such as Chicago and Gary, Indiana.

# CHAPTER XII

## FORECASTING COMMODITY PRICES
## GENERAL FACTORS

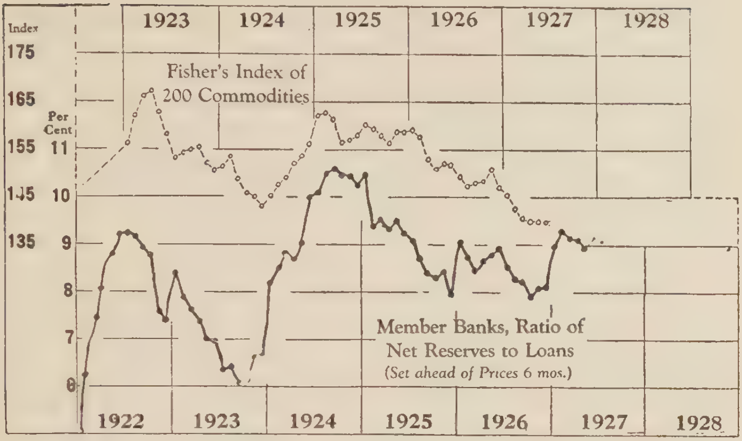
In forecasting the prices of individual commodities, consideration should be given to their relation to the trend of the average price of all commodities. There are several agencies which compile commodity price indexes designed to show this trend. Bradstreet's, Dun's and the United States Bureau of Labor publish monthly indexes. Professor Irving Fisher of Yale publishes a weekly index. The Bureau of Labor index includes the largest number of commodities. Fisher's index is valuable because of the frequency of publication.

The Bureau of Labor's index includes 550 commodities and is weighted according to the quantity of each article marketed in 1923 and 1925. The average 1926 price of each item is used as the base price, and this price multiplied by the quantity marketed in 1923 and 1925 is represented by 100.

In forecasting the trend of the average price of all commodities as represented by the various price indexes, the supply of money and credit is an important factor. Many commodities have world markets and currency conditions in foreign countries must be considered in judging broad swings of prices. In the United States, moreover, federal reserve policy deserves attention. In a given year the total gold reserves may permit credit expansion and rising prices, whereas a restrictive policy enforced by the federal reserve banks will actually prevent price inflation. These various factors must be kept in mind, and allowed for, when attempting to analyze the trend of prices with reference to a single monetary barometer, such as money rates, bank reserves or the "reserve ratio" of the federal reserve banks.

In the following chart Fisher's price index is compared with only one factor—the ratio of the net reserves to the loans of the "member banks". The general trend of prices, over short periods, tends to follow the fluctuations in this net reserve ratio. The lag is six to nine months in short cycles and longer in periods of extreme inflation or deflation. The graphs in the chart are "staggered" to bring them into closer correlation, the ratio of reserves to loans being set ahead of prices six months.

Over a period of ten, twenty or thirty years, the lower graph—the banking indicator—will tend to move sidewise along a horizontal axis. The price index, however, will not hold to a horizontal line. The long swing trend of prices will be downward if the production of commodities increases more rapidly than the total supply of money and credit; it will be upward when the total supply of money and credit increases in more rapid proportion than the production of goods. The long swing trend is a separate



study in itself. The indicator of bank credit in the accompanying chart relates only to the cyclical short swings of prices.

Our next approach to the consideration of individual commodities is the study of basic industries which are large consumers. The remainder of this chapter is devoted to data on automobile production, building activity and railway buying.

## Automobiles in Use

Automobile manufacturers have become important consumers of steel and other raw materials only in the last few years. In 1926, however, the total value of automobiles manufactured was over 3 billion dollars, or about 5 per cent of the total value of all manufactured products. The output of 4,219,000 motor cars in 1926 was a record achievement, and brought the total number of automobiles registered in the United States up to approximately 22,000,000, or nearly enough to provide a car for every five people. The following table shows the annual output, exports and domestic deliveries in the United States during the eight years ended with 1926:

United States Automobile Output and Distribution

| Year | Output | Exports | Domestic Sales |
|---|---|---|---|
| 1919 | 1,974,000 | 83,000 | 1,891,000 |
| 1920 | 2,107,000 | 172,000 | 1,935,000 |
| 1921 | 1,596,000 | 38,000 | 1,558,000 |
| 1922 | 2,561,000 | 78,000 | 2,483,000 |
| 1923 | 3,942,000 | 152,000 | 3,790,000 |
| 1924 | 3,505,000 | 179,000 | 3,326,000 |
| 1925 | 4,175,000 | 303,000 | 3,872,000 |
| 1926 | 4,219,000 | 306,000 | 3,913,000 |
| Total, 8 years | 24,079,000 | 1,311,000 | 22,768,000 |

From the beginning of the automobile industry in 1895 to the end of 1926 the number of motor cars manufactured totaled 31,800,000. The total output during the entire twenty-four year period previous to 1919 was only 7,721,000 cars as compared with 24,079,000 for the eight year period following.

The life of an automobile on the average is slightly less than seven years. This is indicated by the fact that the number of cars registered at the end of 1926 was somewhat smaller than the domestic sales during the eight years, 1919–1926, inclusive. This gives us a basis for estimating each year the replacement demand which is now an important factor in judging the future output.

The number of automobiles scrapped in 1926 was apparently 1,891,000 because that was the number built in 1919. New domestic customers in 1926 totaled 2,022,000. The prospect is that 3,913,000 cars will be scrapped and will have to be replaced in 1933 because that number was sold in 1926.

It will be seen from the foregoing that the registration figure for any given year is larger than the actual number of cars in operation. The probable number of cars scrapped during a year must be subtracted from the registration figure. The actual number in operation at the beginning of 1927 was approximately 20,100,000 instead of the 22,000,000 registered in 1926.

## Automobile Saturation Point

The saturation point in the automobile industry is a much discussed question. Much of the difficulty, however, is the result of different definitions of the term. Those who say that there is no saturation point are right if they mean that the number of automobiles in the country over the long-term trend is going to show a continual growth. The prospect of a continued increase in the population and national income of the United States guarantees that.

Those who say that there is a saturation point are probably right if they mean that a point will some time be reached when further increases in the number of automobiles will be determined entirely by the rate of the country's growth. It is reasonable to believe that the time will come when the per capita number of cars will change little and the total number will increase only with the increase in population, or rather with the growth of national income.

This point is naturally difficult to determine. Colonel Leonard Ayres, of the Cleveland Trust Company, believes that the number of families represents the saturation point. At the end of 1926 there were 27 million families in the United States, indicating that at the beginning of 1927 there were nearly 7,000,000 more possible customers before the automobile companies would have to depend entirely upon replacements, exports and normal growth.

There is, however, the factor of trucks and motor busses to be taken into consideration. The foregoing figures include these as well as passenger cars. If we assume that eventually every family on the average will own a passenger car, the saturation point will equal that figure plus the number of trucks and motor busses that the country can absorb. This suggests that the saturation point is further off than the total figures indicate. There is apparently room for a great many more trucks, especially in the agricultural regions, and the use of busses in the transportation of passengers is steadily increasing.

The prospect is, therefore, that automobile production will continue to show an upward trend. When the per capita saturation point is reached, the automobile companies will have a heavy replacement demand to depend upon in addition to the new demand resulting from the normal growth.

It must not be assumed, however, that automobile production will show an increase every year over the preceding one. Only a part of the number of possible new customers is going to come into the market each year, and, consequently, temporary overproduction is possible.

## Monthly Automobile Data

The trend of automobile production can be followed month by month from statistics compiled and published by the Government. The following table shows the monthly output of passenger cars and trucks in the United States in 1926.

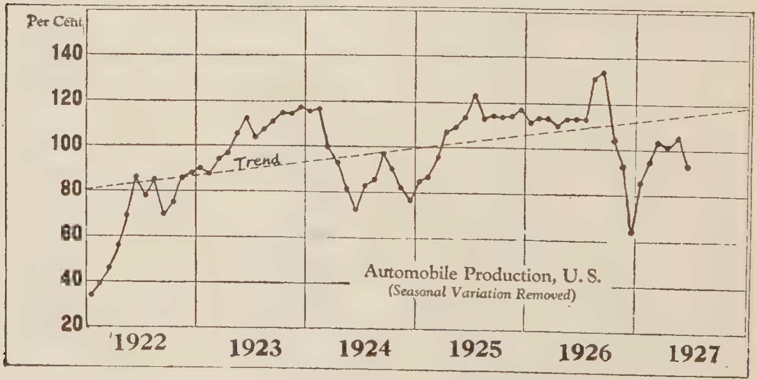
Automobile Output in the United States in 1926, by Months

| | Passenger Cars | Trucks | Total |
|---|---|---|---|
| Jan. | 272,922 | 27,690 | 300,612 |
| Feb. | 319,763 | 34,668 | 354,431 |
| Mar. | 381,116 | 41,612 | 422,728 |
| April | 383,907 | 46,616 | 430,523 |
| May | 373,140 | 44,071 | 417,211 |
| June | 339,570 | 40,802 | 380,372 |
| July | 317,006 | 37,388 | 354,394 |
| Aug. | 380,282 | 42,012 | 422,294 |
| Sept. | 350,923 | 42,433 | 393,356 |
| Oct. | 289,565 | 39,577 | 329,142 |
| Nov. | 219,504 | 31,446 | 250,950 |
| Dec. | 137,361 | 26,068 | 163,429 |
| Total | 3,765,059 | 454,383 | 4,219,442 |

Automobile production usually shows a seasonal curtailment beginning the latter part of the spring and lasting through the summer. Such curtailment, unless it becomes pronounced, should not be taken as a sign of a coming depression in the automobile industry.

Abnormal factors may also enter into the situation. A sharp decline in the output in August, 1925, was due to the fact that Ford ran into mechanical difficulties in putting out a new model and not to any depression in business. The high output in October, 1925, subsequently proved that conditions were prosperous.

There is no exact means of determining when overproduction is occurring. A general idea may be formed by comparing the current rate of output with past performance as in the following diagram, where the index for each month is the ratio to a four-year average for the given month.



Further assistance is rendered by statistics issued monthly by the General Motors Corporation showing not only sales to retailers but retailers' sales to consumers.

As the following table shows, stocks in the hands of dealers were heavy at the end of 1923, forecasting the curtailment in automobile output which occurred in 1924. In 1924 retail sales were decidedly in excess of the output, indicating small stocks in the hands of dealers and forecasting the increase in output which followed in 1925.

Sales of General Motors Makes

| | To Dealers | To Consumers | Net to Dealers | Net to Consumers |
|---|---|---|---|---|
| 1922 .... | 456,763 | 446,334 | 10,429 | ..... |
| 1923 .... | 798,615 | 731,281 | 67,334 | ..... |
| 1924 .... | 587,341 | 657,568 | .... | 70,227 |
| 1925 .... | 834,902 | 827,056 | 7,846 | ..... |
| 1926 .... | 1,234,850 | 1,215,826 | 19,024 | ..... |

## Automobile Production Capacity

The automobile industry is in a position to overproduce, if manufacturers are not on their guard, because of the large capacity. The annual capacity in 1926 was over 6,000,000 automobiles, whereas the record 1926 demand was equal to only two-thirds of capacity. The capacity has tended to increase, although in 1926 there were less than half as many passenger car manufacturers in the field as in 1922, when weaker concerns began to be forced out of business because of the severity of competition. It is estimated that since the beginning of the industry about five hundred makes have been discontinued. The heavy producing capacity has permitted economy in manufacturing costs and a continual downward revision of prices.

In considering the future of the automobile industry, attention should be given to the export factor, which is a relatively small matter now but which has the possibility of becoming of considerable importance. Exports from the United States showed a steady increase from 38,000 in 1921 to 306,000 in 1926, as a foregoing table shows. There is apparently a large field for automobile sales in foreign countries and foreign manufacturers are offering the United States little competition. Canada is next to the United States in the number of automobiles produced, but in 1926 Canada made only 205,000 cars as compared with over 4,000,000 in the United States. Production figures for other countries are unreliable, but the output in France in 1926 was about 200,000; in the United Kingdom, 199,000; and in all other foreign countries combined 139,000.

At the beginning of 1927, the world's registration of motor vehicles totaled 27,650,000, but only 5,513,000 of these were in countries other than the United States. The United States had 22,137,000; the United Kingdom, 1,024,000; France, 891,000; Canada, 829,000; Germany, 319,000; Australia, 366,000; Italy, 138,000; Argentina, 223,000; and all other countries combined, 1,723,000.

If as large a percentage of the people in the rest of the world owned automobiles as in the United States, there would be 280,000,000 cars in foreign countries instead of 5,500,000. It is not reasonable, of course, to assume that the potential automobile sales abroad will be as large as the number of automobiles in the United States would seem superficially to indicate. A large part of the world's population is in India and China, and most of the people in these countries are too poor to afford a sufficiency of even the absolute necessities of life. In Europe, also, a low per capita income places a severe limitation on the number of automobiles that can be sold. Not only is the initial cost too high, but the price of gasoline is higher than in the United States because of the lack of petroleum resources. About 85 per cent of the world's output of petroleum is produced in the United States and Mexico. The need for economy in the consumption of gasoline outside of the United States is indicated by the greater popularity of the motorcycle abroad. Motorcycles represent nearly 25 per cent of the motor vehicles in foreign countries as compared with less than 1 per cent in the United States. The United States has about 150,000 motorcycles; other countries combined, 1,350,000.

It is apparent, however, that notwithstanding the unfavorable factors, there is room for some expansion in the sales of motor cars abroad. The chief uncertainty relates to the extent to which tariff duties will exclude American cars from the European market.

## Building Statistics

Fluctuations in business activity depend more upon the volume of building than upon any other single factor. Nearly 9 billion dollars was spent on construction work in 1926, a sum equal to 10 per cent of the national income. The steel, lumber, cement, brick, glass, paint, hardware, electrical and furniture industries are particularly dependent upon building activity. It is obvious that it is necessary to visualize the future course of building in order to forecast the price trends of building materials.

The most satisfactory information on building activity is furnished by the statistics compiled by the F. W. Dodge Corporation covering contracts awarded. Not only is the value of building contracted for reported, but also the number of square feet of new floor space covered by the contracts. The information on the physical volume of new building is particularly valuable in making comparisons; changes in the cost of construction do not have to be taken into consideration as is the case when figures covering the value of contracts are used. If, for instance, we compare the *value* of contracts awarded in 1926 with the *value* of contracts awarded in 1913, a much greater increase in building is shown than actually occurred from the standpoint of physical volume, the cost of construction being so much higher in 1926 than in 1913. While a comparison of the value of contracts awarded might suggest that building was being greatly overdone in 1926 and a severe depression in prospect, a comparison of the figures covering the physical volume of building would considerably modify such a conclusion.

The building statistics of the F. W. Dodge Corporation are classified according to type of building and also according to locality. The chief drawback is that the figures do not cover the entire United States. The field, however, has been expanded in recent years until it now covers 37 Eastern states, which account for about 91 per cent of the total construction in the United States. The outstanding omission is the volume of building done on the Pacific Coast.

Previous to 1923 the F. W. Dodge figures covered only 27 Northeastern states, 78 per cent of the total building in the United States. In 1923, 9 Southeastern states were added, and in 1925 Texas was included. Consequently, we have comparative figures for 37 states only as far back as 1925, and for 36 states back to 1923. If it is desired to make comparisons with earlier years, figures covering only 27 states are available.

Another method in making comparisons is to compute the total volume of building for the United States from the 78 per cent contracted for in 27 states, from the 88 per cent in 36 states and from the 91 per cent in 37 states.

The F. W. Dodge Corporation began to compile statistics on the physical volume of building in 1919.

Previous to that year only the value of contracts is available, but the number of square feet contracted for can be estimated by dividing the value by an estimate of the approximate cost per square foot. The F. W. Dodge Corporation has estimated the number of square feet contracted for, for residential and factory buildings back to 1915.

Among other organizations which compile statistics on building activity, S. W. Straus and Company and Bradstreet's should be mentioned. These concerns issue figures on the value of building permits, instead of contracts as reported by the F. W. Dodge Corporation. The value of building permits is probably a less accurate index than the value of building contracted for.

The various reports on the value of building permits cover the entire United States but are confined to the principal cities. Consequently, the F. W. Dodge figures, which cover small towns and rural districts as well as cities, show a larger total than other reports. The following table compares the reports of the various organizations on the volume of building in the United States in 1926.

Comparison of Reports on Total Building in United States in 1926

| | |
|---|---|
| F. W. Dodge Corporation | $6,978,000,000 |
| S. W. Straus and Company | 4,360,000,000 |
| Bradstreet's | 3,653,000,000 |

There is a substantial volume of construction work done in the United States which is not reported; it is probable that even the F. W. Dodge figure shown above does not represent over 80 per cent of the total. The probable value of building was consequently about $8,725,000,000 in 1926. The difference in the figures shown in the foregoing table is due to the difference in the number of places reported upon. S. W. Straus and Company's figures covered 472 cities in 1926; Bradstreet's, 187 cities. It is important, therefore, to ascertain the source of building statistics in order to know what proportion of the total building of the United States is represented.

The following table shows the trend of building contracts awarded according to value as reported by the F. W. Dodge Corporation since 1910:

Building Contracts (Value)

| | 27 States | 36 States | 37 States | Estimated United States Total |
|---|---|---|---|---|
| 1910 | $ 806,000,000 | | | $1,061,000,000 |
| 1911 | 777,000,000 | | | 1,022,000,000 |
| 1912 | 868,000,000 | | | 1,142,000,000 |
| 1913 | 858,000,000 | | | 1,129,000,000 |
| 1914 | 720,000,000 | | | 947,000,000 |
| 1915 | 940,000,000 | | | 1,237,000,000 |
| 1916 | 1,357,000,000 | | | 1,786,000,000 |
| 1917 | 1,618,000,000 | | | 2,129,000,000 |
| 1918 | 1,689,000,000 | | | 2,222,000,000 |
| 1919 | 2,580,000,000 | | | 3,395,000,000 |
| 1920 | 2,565,000,000 | | | 3,375,000,000 |
| 1921 | 2,355,000,000 | | | 3,099,000,000 |
| 1922 | 2,344,000,000 | | | 3,084,000,000 |
| 1923 | 3,504,000,000 | $3,990,000,000 | | 4,534,000,000 |
| 1924 | 3,873,000,000 | 4,479,000,000 | | 5,090,000,000 |
| 1925 | 5,042,000,000 | 5,821,000,000 | $6,006,000,000 | 6,600,000,000 |
| 1926 | 5,388,000,000 | 6,118,000,000 | 6,350,000,000 | 6,978,000,000 |

## The Trend of Building

The increase in the physical volume of building during recent years has been less pronounced than indicated by the value of contracts awarded shown in the foregoing table, the latter being swollen by the increase in the cost of construction. It should also be kept in mind that *square feet* figures and *value* figures may show a different variation from one year to the next because public works and public utilities are not satisfactorily measured in square feet, and are not included in the "square feet" total. Hence, the actual physical volume of building may show more of an increase from one year to the next than that indicated by square feet figures. The following table shows the available figures for the number of square feet covered by contracts since 1919, the first year the F. W. Dodge Corporation compiled such statistics. The increase from 1919 to 1926 is 33 per cent as compared with an increase of 109 per cent in value.

Building Contracts (Square Feet)

| | 27 North-eastern States | Estimated United States Total |
|---|---|---|
| 1919 .......... | 560,000,000 | 737,000,000 |
| 1920 .......... | 401,000,000 | 528,000,000 |
| 1921 .......... | 387,000,000 | 509,000,000 |
| 1922 .......... | 573,000,000 | 754,000,000 |
| 1923 .......... | 592,000,000 | 779,000,000 |
| 1924 .......... | 603,000,000 | 793,000,000 |
| 1925 .......... | 773,000,000 | 1,029,000,000 |
| 1926 .......... | 746,000,000 | 971,000,000 |

The annual average number of square feet of floor space contracted for during the four pre-war years, 1910–1913, was approximately 465,000,000 for the entire country, so that the physical volume of building in 1926 showed an increase of only 109 per cent, whereas the value of contracts showed an increase of 540 per cent over the pre-war average.

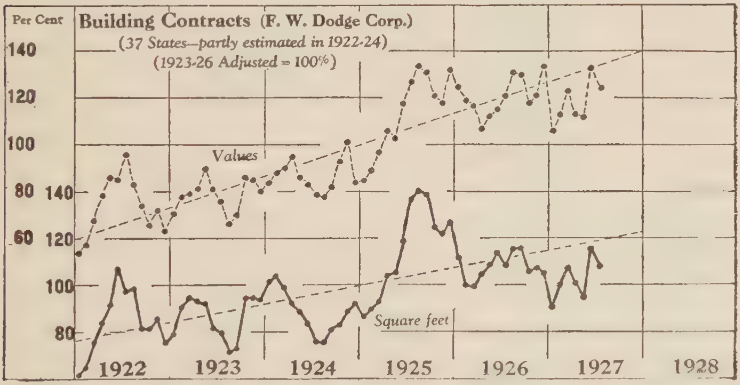
But even the physical volume of building has been conspicuously heavy during recent years. The most popular explanation of this high rate of building activity has been based on the need of making up the shortage resulting from curtailed construction work during the War. This shortage, however, has been apparently exaggerated and it only partly explains the recent high rate of building operations. In the first place, per capita productivity is greater than before the War, the standard of living is materially higher, and people are consequently demanding better homes. In the second place, the supply of loanable funds has been large, interest rates have been reasonable and the financing of new building has not been difficult. Faith in the Federal Reserve System makes builders and lenders more aggressive in realty financing.

These factors have to be taken into consideration in forecasting the future trend of building. The prospect is that over the long term, the annual volume of building will show a steady expansion. Not only will there be more building needed because of the increase in the population but more building per capita will be needed because of the increase in real income.

Periods of building curtailment, which are bound to occur from time to time, will prove to be only temporary. In the long-term trend of construction work, an actual surplus of building is not to be feared. A temporary surplus may occur if high prices stimulate construction to a point where the supply of a given kind of business or residential building is greater than the demand for such space. But prices and rents will then decline to a level where demand will be stimulated and not only will the surplus disappear but an apparent shortage will develop.

In recent years temporary curtailment of building has developed in 1924 and 1927. We have no chart of the amount of building completed from month to month. We have statistics of building contracts, but several months are required to complete a new project after the contract is awarded, so that heavy contracts in August may relate more to actual building activity in September and October than to operations in August. By making allowance for this fact the trend of building operations can be judged by following a chart of contracts.

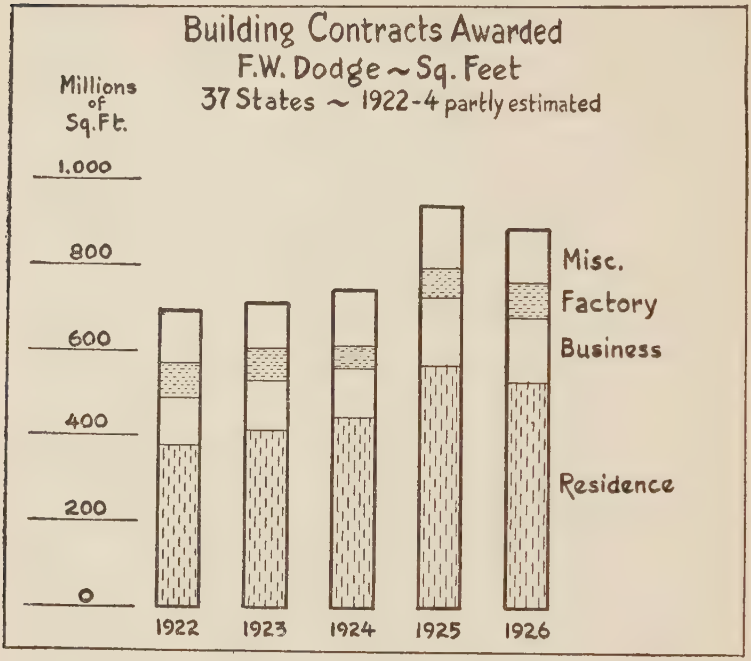
The two accompanying graphs show the oscillations in building contracts in recent years. In both graphs seasonal variation is eliminated. The chief difference between the two curves is that one represents the money value of all building contracts reported in 37 states, including public works and utilities, as well as residences, factories and office buildings, while the other curve is based upon the building contracts which are expressed in square feet (necessarily excluding public works and utilities). The oscillations of the two curves are very similar. In 1927, however, residential building was curtailed while public utility contracts increased, causing the total value of all building to hold up better than the contracts expressed in square feet. The latter were dominated by residential construction which was declining, while the total value included public works and utilities, contracts for which in 1927 were increasing.



The accompanying block diagram shows the large part which residential construction plays in building activity. (See page 284.)

## Building Costs

Various indexes have been compiled for the purpose of showing the trend of building costs. The



*Engineering News Record,* for instance, compiles an index based upon the costs of structural steel, cement, lumber, and common labor, and weighted on the basis of the total production of steel, cement, lumber and the total supply of common labor. This index rose from 100 in 1914, the year chosen as a base for the index number, to a peak of 274 in June, 1920. After declining to 162 in February, 1922, it recovered to 225 in March, 1924, and at the end of 1926 stood at 211.

The American Appraisal Company compiles separate cost indexes for frame buildings, brick buildings with wood frames, brick buildings with steel frames and reinforced concrete buildings.

The following table compiled by the Copper and Brass Research Association shows how the cost of the construction of a frame house is divided.

Cost Items in Building
($15,000 Frame House)

| | Actual Cost | Per Cent of Total |
|---|---|---|
| Carpentry | $ 4,080 | 27.2 |
| Stucco, plaster and tile | 1,590 | 10.6 |
| Masonry | 1,410 | 9.4 |
| Plumbing | 1,395 | 9.3 |
| Heating | 1,050 | 7.0 |
| Roofing | 810 | 5.4 |
| Painting and glazing | 675 | 4.5 |
| Electric wiring, etc. | 405 | 2.7 |
| Hardware | 300 | 2.0 |
| Excavating and grading | 270 | 1.8 |
| Screens | 135 | 0.9 |
| Flashings, downspouts, etc. | 105 | 0.7 |
| Total construction | $12,225 | 81.5 |
| Builder's profit | 1,410 | 9.4 |
| Architect's fee | 675 | 4.5 |
| Landscaping | 450 | 3.0 |
| Financing | 240 | 1.6 |
| Grand Total | $15,000 | 100.0 |

The cost of construction naturally varies in accordance with the type of building. It costs more per cubic foot to erect an elevator apartment, for instance, than a frame dwelling. The following table compares the construction costs for various types of structures in 1925.

Construction Costs for Various Types of Structures

| Type | Cost per Cubic Foot |
|---|---|
| Duplex frame dwelling—low grade | $0.27 |
| Suburban frame dwelling—medium grade | .36 |
| Suburban residence—better grade | .44 |
| Walk-up apartments—non-fireproof | .27 |
| High class elevator apartments | .77 |
| High class hotel | .88 |
| Office building | .51 |
| Factory, concrete—no sprinklers | .25 |
| Loft building | .44 |

The fact that the average price of building materials at the end of 1926 was 73 per cent higher than before the War, while the average for all commodities was only 47 per cent higher, is indicative in itself of a high rate of building activity. The price level of an individual building material, however, does not necessarily reflect the rate of construction work. In the case of lumber, for instance, high prices have been partly due to the fact that our forest resources have been showing a steady depletion. In the case of steel the price tendency has been downward since 1923, notwithstanding the heavy volume of construction work and a heavy consumption of steel by other industries. During the War, the producing capacity of the steel industry was expanded to such an extent that it has been more than sufficient to meet requirements notwithstanding the large demand. The competition among steel companies that occurred because of this overcapacity has resulted in increased efficiency in production, lower costs, and a downward trend of prices.

Adequate current information on the cost of labor in the building industry is more difficult to obtain than information on the prices of building materials. There are many different classes of labor and consequently different scales of wages. Wages for the same class differ in different cities. The Department of Labor publishes from time to time union wage scales by cities. If building, however, is very active and labor in large demand, wages may be higher than indicated by the wage scales because of the payment of bonuses. The cost of nonunion labor is also an uncertain factor.

The difficulty of determining the cost of labor is increased by lack of current statistics on the supply of labor. The Census Bureau's report every ten years is soon out of date. In 1920, for instance, the Census Bureau reported that there were only 133,000 bricklayers in the United States as compared with 169,000 in 1910, a decrease of 21 per cent. The heavy volume of building in 1926, however, suggests that the number must have shown a substantial increase, thus making the 1920 figure practically worthless as a basis for judging the value of labor from the standpoint of supply.

In the case of common labor, especially, there is competition between the building industry and other industries. Consequently, when industrial activity in general is at a high rate, the wages of building labor tend to be bolstered up.

In the New York building trades sixty-seven different occupations are listed. The following table shows the union wage scales in effect in 1926 for some of the principal trades.

Building Wage Scales in New York City, 1926

| Occupation | Wage Rates per Day |
|---|---|
| Bricklayers .................... | $14.00 |
| Stone masons .................. | 14.00 |
| Carpenters .................... | 12.00 |
| Cement masons ................ | 12.00 |
| Electrical workers ............ | 12.00 |
| Painters ...................... | 12.00 |
| Derrick men ................... | 11.00 |
| Bricklayer's helpers ........... | 9.00 |
| Common laborers .............. | 8.00 |

The bricklayer's wage in New York advanced from 70 cents per hour in 1913 to $1.75 in 1926; the carpenter's wage, from 62½ cents to $1.50; and the laborer's wage, from 22½ cents to $1.00.

The difference in wages paid in various cities may be illustrated by the case of the carpenter. The carpenter's wage ranges from 40 cents an hour in Columbia, South Carolina, to $1.50 in New York. It is $1.10 in Boston, 85 cents in Detroit, $1.15 in Chicago and $1.00 in San Francisco.

In forecasting the near-term trend of building it is necessary to consider not only the previous rate of building activity and the cost of materials and labor, but also the level of rents, the prospective supply of loanable funds, and the outlook for business in general.

The National Industrial Conference Board includes in its cost-of-living index, an index of the cost of shelter which affords some indication of the trend of rents. The index has for its base an average of rents in July, 1914, which is represented by 100. During the War the index rose to 118. After the War the index advanced to a peak of 186 in July, 1924, and then showed a downward tendency. The index at the end of 1926 was 173.

Consideration must also be given to the seasonal trend of building. The usual trend is for contracts awarded to reach a peak in the spring and then show a steady decline during the last half of the year. This downward tendency during the latter part of the year should not be taken as an indication of a coming slump unless the decline is more pronounced than usual and the various factors upon which building activity depends appear unfavorable.

## Sectional Distribution of Building

Building over the entire country does not always show a uniform trend. Building in one section may show an increase over the previous year and in another section, a decrease, depending upon local conditions. The various sections are naturally not equally important factors in the building situation as a whole, because of the unequal distribution of the population. An increase in building activity in Chicago, for instance, would affect the total volume of building in the United States to a much larger extent than a proportionate increase in Memphis. It is important, therefore, not only to study business prospects in various sections of the country in forecasting building activity but to take into consideration the importance of the section as a factor in the total volume of building. A large cotton crop at profitable prices would stimulate building in the South, but this increase could be easily offset by a decline in building in New England, New York and Pennsylvania as a result of unfavorable industrial conditions. The following table shows the proportion of building done in the various sections of the country in 1925, as reported by the F. W. Dodge Corporation.

Building Contracts by Districts in 1925 (Square Feet)

F. W. Dodge Corporation

| District | Contracts | Per Cent Total |
|---|---|---|
| New York .............. | 252,900,000 | 24.6 |
| Chicago ................ | 222,800,000 | 21.6 |
| Southeastern ............ | 126,500,000 | 12.3 |
| Pittsburgh .............. | 99,900,000 | 9.7 |
| Philadelphia ............ | 96,700,000 | 9.4 |
| Boston .................. | 83,200,000 | 8.1 |
| Texas ................... | 36,900,000 | 3.6 |
| Minneapolis ............. | 17,300,000 | 1.7 |
| Total 37 states ...... | 936,200,000 | 91.0 |
| Other states (est'd) . | 92,400,000 | 9.0 |
| Total United States | 1,028,600,000 | 100.0 |

The building industry is dependent to a larger extent upon the demand for residences than for any other class of building. The following table shows the contracts awarded in 1925 by types of construction.

Building Contracts by Classes in 1926 (Square Feet)

F. W. Dodge Corporation (37 States)

| Class | Contracts | Per Cent Total |
|---|---|---|
| Residences .............. | 559,500,000 | 59.8 |
| Offices .................. | 160,100,000 | 17.1 |
| Factories ............... | 70,300,000 | 7.5 |
| Other .................. | 146,300,000 | 15.6 |
| Total .............. | 936,200,000 | 100.0 |

## Railroad Buying

The railroads account for a large proportion of steel, coal, lumber and other raw materials consumed in the United States. A mass of information on rail operations is available for study in making forecasts of prospective railroad buying. Care should be exercised in using railroad statistics because the statistics are compiled by various organizations, and some cover railroad activities more completely than others. In making comparisons, there is consequently the danger of considerable error.

A good many reports cover only Class I railroads, whose mileage represents about 94 per cent of the total mileage in the United States. The railroads of the United States are divided by the Interstate Commerce Commission into three classes. Class I companies are those having annual operating revenues above $1,000,000; Class II companies are those having annual operating revenues from $100,000 to $1,000,000; and Class III companies are those having revenues below $100,000. Class I companies report 96 per cent of the total revenues.

The American Railway Association, for example, makes a monthly report on the number of freight cars installed by Class I railroads. The *Railway Age* compiles statistics on freight car orders received by manufacturers from all sources. It is apparent that the first figure cannot be used in conjunction with the second figure without making some allowance for the difference in the fields covered.

The volume of railroad buying has been relatively steady in recent years because the United States is adequately equipped with transportation facilities, and railroad buying has been mostly confined to replacing worn out material and operating existing lines.

Railroad mileage in the United States, after showing a steady increase for seventy-five years, reached a maximum at the end of 1916, and from then until 1925 showed a downward tendency. The total mileage declined from the record figure of 254,037 miles at the end of 1916 to 250,156 miles at the end of 1924. During 1925 and 1926, however, new tracks constructed were slightly in excess of old tracks abandoned, and the total mileage at the end of 1926 was 250,742 miles. New lines constructed in 1926, however, totaled only 1,005 miles as compared with 457 miles abandoned. New lines built represented only a small portion of the steel used for track work. Most of the steel rail tonnage purchased in 1926 was used in replacing old tracks. Only 522 miles of new second, third and fourth track were laid in 1926. In addition to the 251,000 miles of first track in the United States, there are approximately 160,000 miles of the other track, a total of 411,000 miles. Of the 251,000 miles of first track, Class I railroads in 1926 operated 236,000 miles.

The prospect is that from now on, railroad mileage will show only a small increase from year to year, and that steel rail buying will be mainly for replacement purposes and will continue in a relatively steady volume.

The railroads used nearly 23 per cent of the steel produced in 1926. Out of the 7,600,000 tons of finished steel taken by the railroads in 1926, over 4,100,000 tons were used for track work. Rail replacement requirements accounted for over 3,700,000 tons. The remainder of the steel used was divided between cars, locomotives, and railroad construction work. Approximately 2,500,000 tons were used for railroad equipment and 1,000,000 tons were used for building. Freight cars accounted for about 2,000,000 tons or 80 per cent of the steel used for railroad equipment. Prospective freight car buying is consequently an important factor to consider.

## Railway Freight Car Data

The American Railway Association issues a weekly report on the number of freight cars loaded in the United States. Loadings in 1926 reached the record total of 53,310,000 cars as compared with 51,224,000 cars in 1925. Car loadings in 1926 consequently averaged over 1,000,000 weekly, a good figure to keep in mind as a basis for judging from weekly reports the adequacy of railroad equipment. The freight car equipment in 1926 proved sufficient to meet requirements, and at the same time enabled the railroads to keep on hand a comfortable supply of unused cars. New freight car buying was consequently confined in 1926 to the replacement of worn-out cars.

In addition to the information on the trend of the volume of railroad traffic as furnished by freight car loadings, the American Railway Association provides a second check on the adequacy of freight car equipment by issuing weekly reports on the number of freight cars on hand in excess of requirements when there is a surplus, and the number of cars short of requirements when there is a shortage. A third check on the adequacy of railroad equipment is provided by semimonthly reports on the number of freight cars in need of repair.

The American Railway Association also reports on the number of freight cars owned by Class I railroads at the end of each month. During 1926, the total number declined from 2,347,275 to 2,336,470. However, notwithstanding the fact that more freight cars were retired than installed during 1926, the freight car equipment at the end of the year was capable of handling more freight than at the beginning because of the increase in capacity per car. The combined capacity increased during 1926 from 210,171,000,000 pounds to 211,436,000,000. This shows that consideration should be given not only to the number of freight cars but also to the capacity. Worn-out freight cars are now being replaced by freight cars of a larger capacity and it is possible to increase the amount of freight that can be carried by installing a smaller number of freight cars than are retired.

The American Railway Association reports monthly on the number of freight cars installed and retired by Class I railroads. In 1926 installations totaled 104,000 as compared with 115,000 retired. The figure covering retirements in 1926 may be considered a fair average to use as a basis in forecasting the minimum annual freight car requirements of the railroads. When the current freight car equipment appears adequate to handle the coming year's business, the number of new freight cars that will be installed may be expected to equal approximately the normal retirement figure, although some allowance should be made for the larger capacity of the new freight car.

The trend of freight car buying may be followed from the monthly reports compiled by the *Railway Age* on orders placed with freight car manufacturers. In using these figures in conjunction with installation requirements, several factors must be given consideration.

In the first place, while installation figures cover only Class I railroads, figures representing orders placed with manufacturers cover purchases by all railroads and private concerns. In the second place, not all freight cars are built by manufacturers but *some are built in railroad shops.* The number of cars installed by Class I railroads is generally considerably larger than the number of cars ordered from manufacturers by all purchasers. In 1926, freight car manufacturers built only 89,000 cars as compared with 104,000 cars installed by Class I railroads.

Figures covering new orders must be considered in connection with unfilled orders on hand. More steel was used by freight car manufacturers in 1926 than indicated by new orders for freight cars, because unfilled orders on hand at the beginning of 1926 were sufficient to permit a larger output than new orders during the year represented. New orders in 1926 totaled only 67,000 freight cars, 22,000 less than the number built. This was made possible by a reduction in unfilled orders during 1926 from 34,000 to 12,000. Consequently a larger number of new orders placed in 1927 than in 1926 would not necessarily represent a larger consumption of steel because in 1926 the small number of new orders was offset by a large amount of unfilled orders at the beginning of the year. The following table shows the number of freight cars ordered from manufacturers, the number built by manufacturers and the number installed by Class I railroads from the beginning of 1919 to the end of 1926:

Freight Car Statistics

| Year | Total Ordered from Manufacturers | Total Built by Manufacturers | Number Installed by Class I RR | Number Retired by Class I RR |
|---|---|---|---|---|
| 1919 .... | 22,000 | 95,000 | 76,000 | 43,000 |
| 1920 .... | 84,000 | 61,000 | 36,000 | 75,000 |
| 1921 .... | 23,000 | 40,000 | 63,000 | 69,000 |
| 1922 .... | 180,000 | 66,000 | 105,000 | 126,000 |
| 1923 .... | 94,000 | 176,000 | 232,000 | 214,000 |
| 1924 .... | 144,000 | 114,000 | 157,000 | 119,000 |
| 1925 .... | 93,000 | 106,000 | 128,000 | 118,000 |
| 1926 .... | 67,000 | 89,000 | 104,000 | 115,000 |

A large amount of statistical information is available in connection with locomotives, but these statistics present difficulties similar to those encountered in the use of freight car statistics. The American Railway Association issues monthly statistics on the number of locomotives owned by Class I railroads, the number of locomotives in bad order, the number installed, retired and in storage. The *Railway Age* compiles statistics on new locomotive orders received by locomotive manufacturers and the Department of Commerce publishes monthly statistics on manufacturers' shipments and unfilled locomotive orders.

Notwithstanding the record-breaking traffic in 1926, the railroads were able to keep on hand at all times a substantial number of unused locomotives. On June 15, 1926, when stored locomotives were at the maximum for the year, there were 5,978 locomotives in storage, or over 9 per cent of all the locomotives owned by Class I railroads. This comfortable reserve of motive power coupled with the railroads' policy of replacing worn-out engines with more powerful engines made it unnecessary to install as many locomotives in 1926 as were retired.

## Locomotives and Passenger Cars

The number of locomotives owned by Class I railroads declined in 1926 from 63,619 to 62,428. The combined tractive power of these locomotives, however, increased during 1926 from 2,585,000,000 pounds to 2,608,000,000 pounds. The number of locomotives installed by Class I railroads in 1926 totaled 2,399 as compared with 3,590 retired. The figure covering locomotives installed by Class I railroads as reported by the American Railway Association was larger than the figure covering the total number of locomotives built by manufacturers and railroads as reported by the *Railway Age*. This discrepancy may partly be accounted for by the fact that installations by Class I railroads include not only rebuilt equipment but leased equipment. The total number of locomotives built in 1926 exceeded the number ordered, the difference being made possible by unfilled orders on hand at the beginning of the year. The following table may be used as a guide in interpreting the various statistics that are issued on locomotives:

Locomotive Statistics

| Year | Total * Ordered from Manufacturers | Total ** Built by Manufacturers | Number Installed by Class I RR | Number Retired by Class I RR |
|---|---|---|---|---|
| 1919 .... | 214 | 2,162 | 2,062 | 999 |
| 1920 .... | 1,998 | 2,022 | 1,017 | 1,254 |
| 1921 .... | 239 | 1,185 | 1,330 | 1,130 |
| 1922 .... | 2,600 | 1,303 | 1,226 | 1,682 |
| 1923 .... | 1,944 | 3,505 | 4,360 | 3,746 |
| 1924 .... | 1,413 | 1,810 | 2,786 | 2,529 |
| 1925 .... | 1,055 | 994 | 1,733 | 2,985 |
| 1926 .... | 1,301 | 1,585 | 2,399 | 3,590 |

* Domestic only. In 1916 manufacturers received in addition orders from Canada for 61 locomotives and orders from other countries for 180 locomotives.

** Includes United States and Canadian output.

Railroad passenger traffic has shown a declining tendency since the end of the War as a result of the competition offered by the automobile. Purchases of passenger cars have consequently been confined to replacement purposes. The American Railway Association reports that passenger cars owned by Class I railroads declined during 1926 from 54,552 to 54,314. The trend of passenger car buying may be followed monthly from statistics published by the *Railway Age* covering the number of passenger cars ordered from manufacturers. The Interstate Commerce Commission publishes reports on shipments of passenger cars by manufacturers. The American Railway Association publishes figures on unfilled orders. The following table, compiled by the *Railway Age,* shows the number of passenger cars ordered from manufacturers and built by manufacturers from the beginning of 1919 to the end of 1926:

Domestic Passenger Car Statistics

| Year | Total Ordered from Manufacturers | Total Built by Manufacturers |
|---|---|---|
| 1919 | 292 | 306 |
| 1920 | 1,781 | 1,272 |
| 1921 | 246 | 1,275 |
| 1922 | 2,382 | 676 |
| 1923 | 2,214 | 1,507 |
| 1924 | 2,554 | 2,150 |
| 1925 | 2,191 | 2,363 |
| 1926 | 1,868 | 2,184 |

# CHAPTER XIII

## INDIVIDUAL COMMODITIES

All commodities may be conveniently grouped under six headings: (1) food, (2) textiles, (3) metals, (4) building materials other than metals, (5) fuels, and (6) miscellaneous.

### Foodstuffs

The food group is the most important. The Department of Labor estimates that the average family spends 38.2 per cent of its income for food as compared with 16.6 per cent for clothes, 13.5 per cent for housing, 5.3 per cent for fuel and light, 5.1 per cent for house furnishings and 21.3 per cent for miscellaneous items.

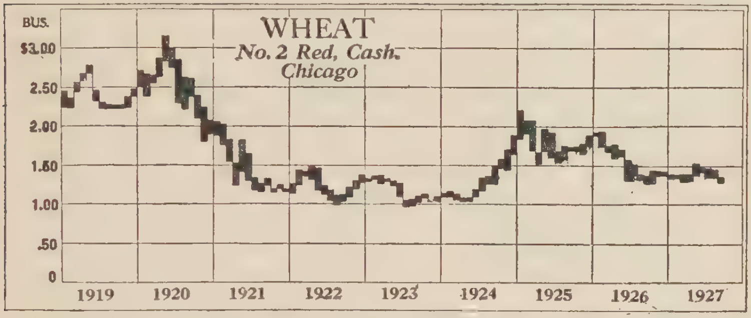
The average family spends 75 per cent of the money spent for food on only eight different items. Meat accounts for 19 per cent of the money spent for food; milk, 12 per cent; bread, 11 per cent; butter, 10 per cent; eggs, 10 per cent; potatoes, 5 per cent; sugar, 4 per cent; coffee, 4 per cent; and all other items combined, 25 per cent.

The United States produces not only a sufficient supply of most articles of food to meet home requirements but exports a substantial quantity of wheat, lard and other foodstuffs. The only important foods which the United States has to import are sugar, coffee, cocoa and tea.

The principal factor in determining the price trend of food in the United States is the crop output. In the case of wheat and other grains, potatoes, apples, vegetables and fruit, the price is directly determined by the size of the various yields. In the case of meat, milk, butter, cheese, poultry and eggs, the price is indirectly determined by the amount of corn, oats, hay and other feed crops raised.

*Wheat.*—The price of wheat depends chiefly upon two factors: first, the exportable surplus of the United States, Canada, Argentina, Australia and India; and, second, the import requirements of Europe. Consequently, in forecasting the price trend of wheat, it is necessary to secure all possible information on the prospective yields of these various countries.

Growing conditions cause considerable variations in the size of the wheat crop from year to year and consequently wheat prices show wide fluctuations. On December 1, 1926, for example, the wheat producer received only $1.20 per bushel as compared with $1.42 on December 1, 1925, due chiefly to a substantial increase in the 1926 yield in the United States. In August, 1923, the wheat producer received only 86 cents, or a price below the five-year, pre-war average of 89 cents. In June, 1920, the producer received $2.56 although this high price was due largely to the general price inflation of that year.



The United States is the world's largest producer of wheat, raising 832 million bushels in 1926, or over 20 per cent of the total world output of approximately 4 billion bushels. The wheat crop of the United States is made up of two varieties, winter wheat and spring wheat. Winter wheat is planted in the fall and harvested during the summer. Spring wheat is planted in the spring and harvested the same year but somewhat later than winter wheat. Kansas is the chief winter wheat producing state, and North Dakota is the chief spring wheat producing state. In 1926 winter wheat made up approximately 75 per cent of the total crop, and spring wheat 25 per cent. The wheat season in the United States starts at the beginning of July. The Government issues monthly forecasts of the wheat yield during the summer and fall. Forecasts indicating a large yield in the United States will naturally have a depressing effect upon the market, whereas forecasts indicating small yields will have a bullish effect. But in weighing the effect of the United States wheat crop upon prices it is always necessary to consider the wheat yields in other countries.

Canada is the world's largest exporter of wheat. Canada's exports during the 1925–1926 season represented approximately half of the world's total exports. The Canadian wheat crop begins to be marketed during the last part of August. Forecasts of the Canadian crop are important to watch because a large yield may more than offset the influence of a small yield in the United States. A small yield in Canada may offset a large yield in the United States.

The export of the Argentine and Australian crops does not begin to be felt until the last part of the year because the crops in these countries do not begin to be harvested until the end of December. India's crop comes to harvest at the beginning of April but, notwithstanding the fact that India is one of the chief wheat-producing countries of the world, her consumption requirements are too heavy to permit her to be an important factor in the export trade.

The European crops begin to be harvested in August, and the size of the European output, exclusive of Russia, determines the amount of wheat Europe will need to import. Russia exported a large amount of wheat to western Europe before the War, and was consequently an important factor in the wheat situation. Since the War, the Russian wheat yield has not been sufficiently large to permit exporting. The Russian yield, however, has been steadily expanding and it is likely that sooner or later Russia will again become a factor which must be taken into consideration in forecasting the price trend of wheat. Before the War, Russia, including Serbia, was the world's largest producer of wheat, raising in 1913 over a billion bushels or about 25 per cent of the world total.

The quantity of wheat that will be available for export during any given season may be approximately determined by deducting from the yield of the various exporting countries the amount of wheat normally needed to meet domestic requirements. The United States consumes about 600 million bushels; Canada, 100 million bushels; Argentina, 60 million bushels; Australia, 40 million bushels; and India, 315 million bushels—or a total consumption of 1,115 million bushels for the chief exporting countries of the world. In 1925 the combined wheat yields of these exporting countries amounted to 1,715,000,000 bushels, indicating an exportable surplus of 600 million bushels, the total output exceeding the total domestic consumption by that figure. The amount of wheat actually exported during the season 1925–1926 was practically the same as the calculated exportable surplus. Actual exports, however, may show some variation from the calculation of the exportable surplus. If the European yield is exceptionally small, the consequent demand causing high prices, the domestic consumption in exporting countries will show some curtailment and make possible heavier exports than indicated at first by the size of the yield and the normal rate of consumption. On the other hand, if European demand is light and the price of wheat consequently low, consumption in exporting countries will show some expansion and exports will be reduced.

The European import demand may be determined approximately by estimating normal requirements at 1,800,000,000 bushels. In 1925 the total European yield amounted to 1,400,000,000 bushels, indicating import requirements of 400 million bushels. Europe's import requirements in 1925 were sufficient to absorb the normal exportable surplus of the exporting countries without unduly depressing the prices, since the import requirements of other countries of the world amounted to 200 million bushels. The world's total import requirements thus amounted to 600 million bushels, the same amount as was available for export from the exporting countries.

As the following table shows, the entire yield of exporting countries in 1926 showed a substantial increase over 1925, providing a larger exportable surplus and explaining the lower level of prices as compared with the previous year. The price of wheat in 1926, however, showed less of a decline than might have been expected from the increase in the world's exportable surplus because of the reduction in the European crop and the consequent increase in the European demand.

World Wheat Production (Bushels)

| | 1926 | 1925 | 1909–13 Av. |
|---|---|---|---|
| United States .. | 832,000,000 | 676,000,000 | 690,000,000 |
| Canada ....... | 406,000,000 | 411,000,000 | 197,000,000 |
| India ......... | 320,000,000 | 324,000,000 | 352,000,000 |
| Argentina ..... | 223,000,000 | 191,000,000 | 147,000,000 |
| Australia ...... | 164,000,000 | 113,000,000 | 90,000,000 |
| Total, Export Countries | 1,945,000,000 | 1,715,000,000 | 1,476,000,000 |
| Europe, excluding Russia .. | 1,230,000,000 | 1,400,000,000 | 1,335,000,000 |
| European Russia and Asia .... | 660,000,000* | 660,000,000 | 759,000,000 |
| Other countries | 225,000,000* | 225,000,000 | 195,000,000 |
| Total, World | 4,060,000,000 | 4,000,000,000 | 3,765,000,000 |

*1925 yields. No 1926 estimate yet available.

*Pork, beef and lamb.*—One of the chief factors in determining the price trend of meat is the output. The output depends upon the yield of corn, oats, hay and other feed. Consequently, the Government's forecasts, issued during the summer and fall as to the probable yields of these crops, are important to watch.

At the beginning of each year the Government issues a report on the number of cattle, hogs and sheep on farms in the United States. At the beginning of 1927 there were 57,521,000 cattle and calves in the United States as compared with the record figure of 68,871,000 at the beginning of 1920. There were 52,536,000 hogs in the United States at the beginning of 1927 as compared with the record figure of 74,584,000 at the beginning of 1919. The number of sheep at the beginning of 1927 totaled 41,909,000 as compared with the record figure of 64,000,000 at the beginning of 1903. These January figures serve as a basis for estimating meat production during the year.

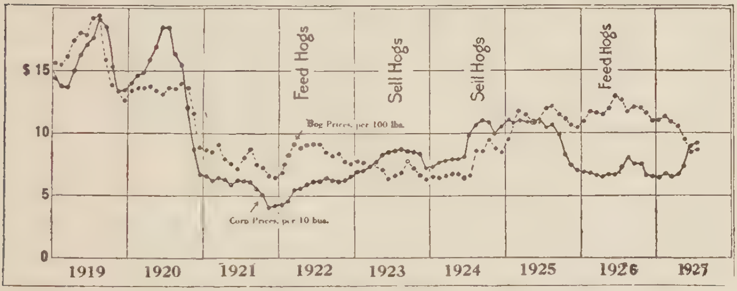
The chief kind of meat consumed in the United States is pork, as the following table shows:

Meat Output in United States in 1926 (Pounds)

| | Federally Inspected | Other (Est.) | Total |
|---|---|---|---|
| Pork ....... | 7,273,000,000 | 3,636,000,000 | 10,909,000,000 |
| Beef ....... | 5,226,000,000 | 2,240,000,000 | 7,466,000,000 |
| Veal ....... | 531,000,000 | 434,000,000 | 965,000,000 |
| Lamb ....... | 501,000,000 | 150,000,000 | 651,000,000 |
| Total ... | 13,531,000,000 | 6,460,000,000 | 19,991,000,000 |

The output of pork depends primarily upon the size of the corn crop. It requires ten bushels of corn to raise 100 pounds of hog. When the corn crop is small and the price of ten bushels exceeds the price of 100 pounds of hog, the tendency is to curtail the raising of pigs. On the other hand, when the corn crop is large and the price of ten bushels drops below the price of 100 pounds of hog, the prospect is for an increase in the number of pigs raised. The record corn crop was raised in 1920, when the yield amounted to 3,209,000,000 bushels. The smallest corn crop in recent years was 2,309,000,000 bushels produced in 1924. The yield in 1926 amounted to 2,645,000,000 bushels.

There are two pig crops raised during the year. The Government issues a report in June, on the number of pigs raised during the spring, and on the farmers' fall farrowing intentions. In December the Government issues a report on the fall pig crop and the farmers' spring farrowing intentions. The farmers' farrowing intentions serve as some guide to the number of pigs that will be raised the following season, but the actual crop generally falls considerably below the intentions expressed.



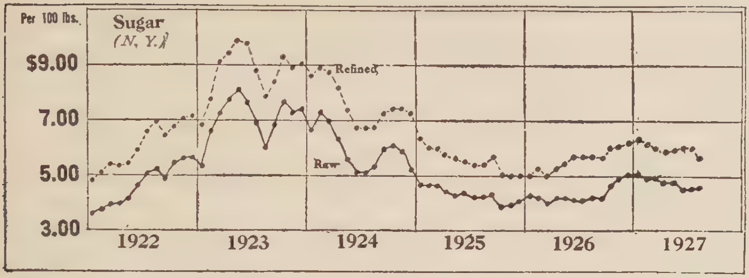
The largest part of the annual pig crop is raised in the spring. In 1926, approximately 43,500,000 pigs were raised in the spring, and 17,500,000 in the fall. The number of hogs slaughtered during 1926 was approximately the same as the number raised, totaling 61,000,000, which resulted in practically the same number of hogs on the farms at the beginning of 1927 as at the beginning of 1926.

The trend of cattle, hog and sheep slaughter, and the production of meat, may be followed from the monthly reports issued by the Department of Agriculture.

*Sugar.*—The size of the Cuban sugar crop is the important factor in determining the price of sugar in the United States. In 1926, Cuba furnished the United States with 62 per cent of the country's total requirements of 6,100,000 long tons, raw value. The crops of Hawaii, Porto Rico and the Philippines are also factors to be considered, since these countries with a small additional amount from other countries furnished the United States with 23 per cent of the total 1926 requirements. The United States raised at home the remaining 15 per cent used.

The supply of Cuban sugar that will be available for export to the United States depends not only upon the output, which at the present time is regulated by the Cuban government, but upon the demand from other countries, especially England. If Continental Europe raises a large beet sugar crop, then England will be able to obtain a good part of her import requirements from such countries as Germany and Czecho-Slovakia and her demand for Cuban sugar will be light. On the other hand, if the European crop is small, then the English demand upon Cuba is likely to be heavy. Information on the size of the European crop is thus valuable in forecasting the price trend of sugar.

In 1926, Cuba produced 4,885,000 long tons of sugar, consumed at home 162,000 tons and exported



4,723,000 tons, of which 3,770,000 tons were shipped to the United States and 953,000 tons to other countries.

In addition to the 3,770,000 tons of Cuban sugar, the United States used 1,399,000 tons from Hawaii, Porto Rico and the Philippines and 931,000 raised at home, a total of 6,100,000 tons. Of this amount, the United States exported 100,000 tons in the form of refined sugar.

Java and India in the Far East are large producers of sugar, but India not only consumes her entire crop but buys a substantial part of Java's exportable surplus. Australia, Japan and other countries of the Far East absorb all the remainder of Java's exportable surplus, and consequently very little sugar raised in the Orient, except in the case of the Philippines, finds its way to Europe or America. Generally, therefore, the Far East's output does not have to be given much weight in determining the price trend of sugar in the United States.

The following table shows the world output for the season 1926–1927, as compared with the world output for the season 1925–1926. The world output in 1925–1926 was the largest on record.

World Sugar Crops (Long Tons)

| | 1926–1927 | 1925–1926 | Change |
|---|---|---|---|
| United States ........ | 920,000 | 931,000 | — 11,000 |
| Hawaii .............. | 692,000 | 702,000 | — 10,000 |
| Porto Rico ........... | 535,000 | 544,000 | — 9,000 |
| Philippines .......... | 500,000 | 426,000 | + 74,000 |
| Total U. S. and Dependencies ............ | 2,647,000 | 2,603,000 | + 44,000 |
| Cuba ................ | 4,500,000 | 4,880,000 | — 380,000 |
| Europe .............. | 7,095,000 | 7,481,000 | — 386,000 |
| India ............... | 3,070,000 | 2,923,000 | + 147,000 |
| Java ................ | 1,973,000 | 2,279,000 | — 306,000 |
| South America ........ | 1,826,000 | 1,714,000 | + 112,000 |
| Africa ............... | 627,000 | 673,000 | — 46,000 |
| Other Countries ...... | 2,251,000 | 2,514,000 | — 263,000 |
| World Total ..... | 23,989,000 | 25,067,000 | —1,078,000 |

*Coffee, cocoa and tea.*—The price trends of coffee, cocoa and tea are difficult to forecast because the United States depends entirely upon imports to meet requirements, and accurate information on the prospective yields of producing countries is difficult to secure. Of the three commodities, coffee is the most important from the standpoint of consumption in the United States. The Department of Commerce reports that imports of coffee during the calendar year 1926 totaled 1,493,000,000 pounds as compared with only 426,000,000 pounds of cocoa imported and 96,000,000 pounds of tea.

The price of coffee depends chiefly upon the Brazilian output. The total quantity of Brazilian coffee that came into sight during the coffee season beginning July 1, 1925, and ending July 1, 1926, amounted to 13,929,000 bags of 132 pounds each, or nearly double the quantity of 7,032,000 bags exported from other producing countries. Consumption of coffee in the United States and Europe is another factor to consider in analyzing the situation. Out of the total world supply of 20,981,000 bags in 1925–1926, the United States imported 10,711,000 bags, and Europe imported 8,667,000 bags, a total of 19,378,000 bags.

Coffee prices are difficult to forecast, not only because of unreliable information as to the size of the crop, but because the Brazilian government exercises control over the exports. However, the coffee market can be analyzed to some extent by following the statistics issued by the New York Coffee and Sugar Exchange, covering such items as receipts at Brazilian ports, stocks on hand at Brazilian ports, exports from Brazilian ports, deliveries in the United States, deliveries in Europe, and visible stocks on hand in the United States and Europe.

The price of cocoa depends chiefly upon the output in British West Africa, which in 1925 produced 477,000,000 pounds on the Gold Coast and 79,000,000 pounds in Nigeria, a total of 556,000,000 pounds out of a world total of 1,086,000,000 pounds. Other important producing countries are Brazil with 143,000,000 pounds in 1925, Ecuador with 75,000,000 pounds, Venezuela with 53,000,000 pounds, Santo Domingo with 51,000,000 pounds and Trinidad with 50,000.000 pounds. The United States consumes more cocoa than any other single country, but consumption in the United States represents only 35 per cent of the total output, and consequently European buying is a more important factor to consider than the demand on the part of the United States.

The price of tea depends chiefly upon the output in India and Ceylon, and consumption in England. India and Ceylon produce over 65 per cent of the total world output, and England consumes over half the world output. The United States consumes not much over 10 per cent of the total world output.

## Textiles

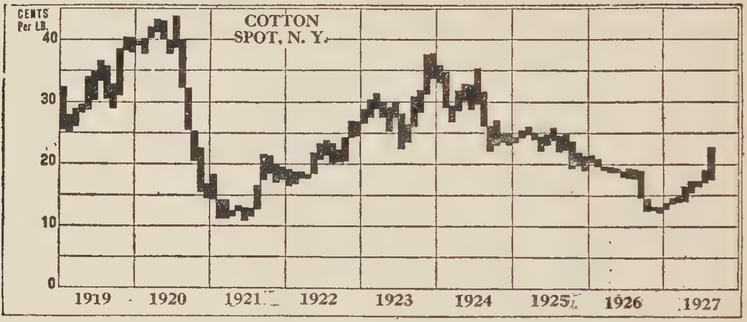
Cotton, wool, and silk are the chief raw materials entering into the manufacture of textiles. Rayon, jute, and flax also deserve mention.

*Rayon.*—Rayon, or artificial silk, is manufactured from wood pulp and its use has expanded conspicuously in recent years. Production in the United States amounted to 62 million pounds in 1926 as compared with 51 million pounds in 1925 and only 8 million pounds in 1919. Europe also produces a large amount of rayon, and imports into the United States compete with the domestic product. The world output in 1926 was probably over 200 million pounds.

*Jute and burlap.*—Jute, from which burlap is manufactured, is grown only in India. The United States imports only a small quantity of jute but a substantial amount of burlap. Most of the burlap is manufactured in India. Scotland ranks second as a manufacturing center. The chief factor in determining the price of jute and burlap is the size of the Indian crop. During the growing season the Indian government issues forecasts which influence the price. The forecasts sometimes fall short of the actual yields. For the season July 1, 1925–July 1, 1926, the Indian government's first estimate indicated a crop of 7,851,328 bales of 400 pounds each, but the actual yield proved to be 9,535,914 bales.

*Flax and linen.*—Flax, from which linen is manufactured, is grown chiefly in Russia. Current information as to the output is difficult to secure. The United States imports all the flax and linen it uses. Flax grown in the United States is raised entirely for the flax seed used in the manufacture of linseed oil.

*Cotton.*—The chief factor to consider in determining the price of cotton is the yield in the United States, which produces about 60 per cent of the total world output. The United States depends to a large extent upon foreign demand in the marketing of the crop and consequently both foreign buying and domestic takings are factors of importance in the situation. In determining the foreign demand consideration must be given to the size of the crops in India and Egypt, the only two countries besides the United States which export cotton in any appreciable amount.



From the time that cotton is planted in the spring until it is harvested in the fall, growing conditions in Texas, which is the largest producing state, and in the rest of the South are primarily responsible for the price trend of cotton. It is possible for the quantity of cotton raised to show a marked change from year to year, depending partly upon acreage, but more especially upon growing conditions. This results in wide fluctuations in the price. The average five-year, pre-war price for spot cotton at New York was 13.18 cents per pound. The high price reached during the inflation period in 1920 was 43.75 cents. In the period of depression in the following year cotton declined to 10.85 cents.

The average annual yield of cotton during the five years before the War was 14,033,000 bales. In 1921 the United States produced only 7,978,000 bales. In

1926, according to the final estimate by the Department of Agriculture in December, the United States raised the record crop of 18,618,000 bales.

During the summer, beginning in July, the Government publishes monthly forecasts of the cotton yield. Beginning in September and running through December, forecasts are issued twice a month. Ginning figures are published twice a month by the Census Bureau beginning in August when the crop year starts. These semi-monthly reports on ginnings are issued until the end of the year. During the following year one report is issued in January, and the final report is issued in March which serves as a check on the Department of Agriculture's final estimate in December. The final ginning figure generally shows a variation from the Department of Agriculture's final estimate, the variation in some cases being considerable.

The total world output of cotton in 1925, the latest figure available, amounted to 27,800,000 bales. The United States produced 16,104,000 bales, or 58 per cent of the total. India produced 4,699,000 bales, or 17 per cent; Egypt, 1,629,000 bales, or 6 per cent; and all other countries combined, 5,400,000 bales, or 19 per cent of the total world output. In forecasting the price trend of cotton, yields in countries other than the United States, India and Egypt may be disregarded since the cotton in other countries is nearly all consumed locally. India consumes about 1,500,000 bales, and consequently the amount by which

India's crop exceeds this figure is available to help meet the requirements of importing countries. Egypt exports practically its entire crop. The United States has available for export all cotton raised in excess of some six or seven million bales which are needed to meet domestic requirements.

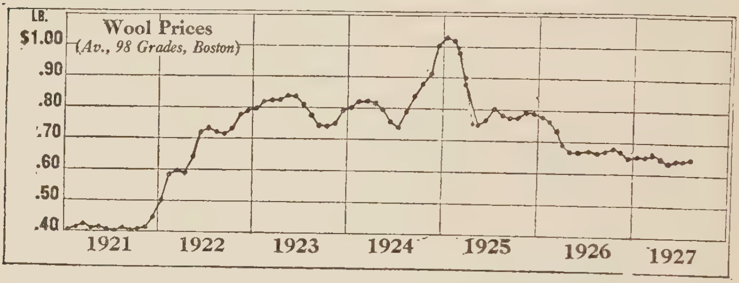
The United Kingdom is the chief importer of cotton, taking over 25 per cent of the total world exports. The United Kingdom, Germany, France, Japan and Italy, together, take about 80 per cent of the world's exports. During the season of 1925–1926 importing countries of the world took approximately 13 million bales, which included 8 million bales from the United States. World imports during this period represent fairly normal requirements and may be used as a basis for estimating future requirements. When the United States, India, and Egypt raise an exportable surplus in excess of 13 million bales, it means an accumulation of stocks on hand, an increased carry-over into the next season, and a depressing influence on the market.

The Census Bureau issues monthly reports on domestic consumption and exports of American grown cotton. After the size of the cotton crop in the United States becomes known, the trend of consumption and exports should be watched closely in determining the price movement. The following table shows the supply and distribution of American cotton during the season of 1925–1926 as compared with the season 1924–1925:

Cotton Supply and Distribution
(Season August 1–July 31)
Running Bales (Linters Excluded)

| | 1925–1926 | 1924–1925 | Per Cent Change |
|---|---|---|---|
| Carry-over Aug. 1 | 1,610,000 | 1,555,000 | + 3.5 |
| Ginnings | 16,008,000 | 13,777,000 | + 16.2 |
| Net imports | 315,000 | 303,000 | + 4.0 |
| Total Supply | 17,933,000 | 15,635,000 | + 14.7 |
| Consumption | 6,451,000 | 6,191,000 | + 4.2 |
| Net exports | 8,042,000 | 7,997,000 | + 0.6 |
| Burned | 50,000 | 26,000 | + 92.3 |
| Total Distribution | 14,543,000 | 14,214,000 | + 2.3 |
| Duplication | 153,000 | 189,000 | — 19.0 |
| Net Distribution | 14,390,000 | 14,025,000 | + 2.6 |
| Carry-over July 31 | 3,543,000 | 1,610,000 | +120.0 |

*Wool.*—The price of wool is chiefly governed by demand in Europe and in the United States. European demand depends not only upon home consumption but also upon exports of woolen goods. This means world conditions need to be considered, which makes price forecasting relatively difficult. The world output of wool shows a comparatively small change from year to year and consequently is a factor of considerably less importance than demand in analyzing the wool situation. The Australian output, however, which represents approximately 25 per cent of the world output, should be watched because now and then a drought in that country causes temporarily a sharp curtailment.



There are so many different grades of wool that the most convenient way of following the trend of the market is by using an average of a number of quotations. Dun compiles an average of 98 quotations at Boston which is a fairly satisfactory index. The price of wool before the War averaged about 40 cents per pound. After the post-war inflation, the price declined in 1921 to the pre-war average. The highest figure reached in the recovery which followed the 1921 depression was $1.03 in January, 1925. At the end of 1926 the average was 65¼ cents.

Europe's annual wool requirements exclusive of Russia amount to approximately 1,950,000,000 pounds. Of this amount, Europe produces only 535,000,000 pounds, making it necessary for Europe to import 1,415,000,000 pounds, chiefly from Australia, Argentina, Uruguay, British South Africa and New Zealand, the principal wool exporting countries. The quantity of wool necessary to meet Europe's normal import requirements is approximately equal to the total output of the principal exporting countries. The world's export surplus, however, is augmented sufficiently by exports from such countries as China and India to offset normal import requirements of the United States.

France is the chief wool consuming country of Europe but is followed closely by England and Germany. France, England, Germany, Belgium and Italy use approximately 80 per cent of all the wool consumed in Europe. Unless the consumption of wool is curtailed in these European countries, a heavy demand on the part of the United States will make for a price advance. On the other hand, if the consumption of wool in the United States is curtailed, the price will show a downward tendency unless European consumption shows a corresponding increase.

The United States at the present time is the second largest producer of wool, but the domestic output is sufficient to meet only half the domestic requirements, and the United States consequently has to depend upon foreign wool for the balance. The trend of wool consumption in the United States may be followed monthly from reports issued by the Department of Commerce. These reports at the present time, however, cover only 80 per cent of the total consumption and it is necessary to raise the figures to 100 per cent before using them in connection with import and production statistics. The trend of imports may also be followed monthly from government reports. The prospective output of wool in the United States for any given year may be estimated from the number of sheep reported on farms at the beginning of the year. The demand for foreign wool on the part of the United States depends not only upon consumption and domestic output but also upon the amount of wool on hand. The Government issues quarterly reports covering the amount of wool held by manufacturers and dealers. Although these reports do not cover total stocks held in the United States, they serve as an indication of the changes in stocks. As the following table shows, import requirements, especially in 1923 and 1924, were less than indicated by the rate of consumption because withdrawals from wool stocks on hand were made possible by a heavy supply held at the beginning of 1923.

Supply and Distribution of Wool in the United States
(Millions of Pounds)

| Year | Output | Imports | Total Supply | Consumption | Change in Stocks |
|---|---|---|---|---|---|
| 1923 ....... | 267 | 394 | 661 | 803 | —142 |
| 1924 ....... | 286 | 268 | 554 | 673 | —119 |
| 1925 ....... | 301 | 339 | 640 | 658 | — 18 |
| 1926 ....... | 315 | 310 | 625 | 638 | — 13 |

The following table shows the world output and approximate consumption of wool in 1925, the latest statistics available at the present time:

World Wool Output in 1925

| Country | Output in Pounds |
|---|---|
| Australia | 735,000,000 |
| Argentina | 275,000,000 |
| South Africa | 185,000,000 |
| New Zealand | 170,000,000 |
| Uruguay | 110,000,000 |
| Total Export Countries | 1,475,000,000 |
| Europe | 535,000,000 |
| United States | 301,000,000 |
| Other countries | 581,000,000 |
| Total, World | 2,892,000,000 |

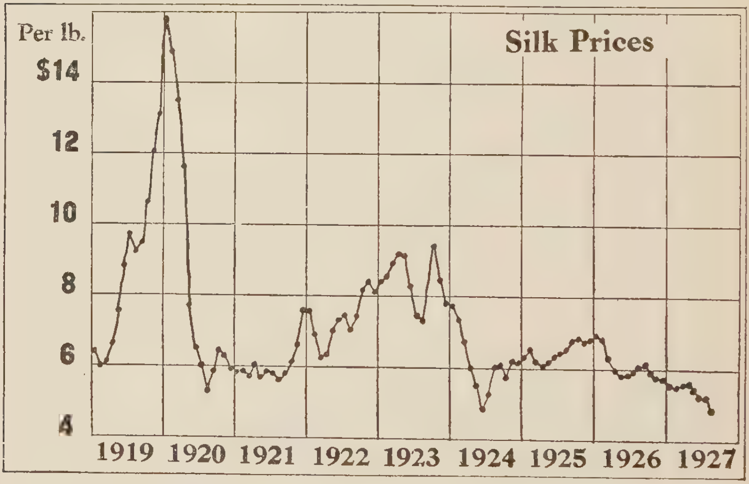
Approximate World Consumption in 1925

| | Pounds |
|---|---|
| Europe | 1,950,000,000 |
| United States | 640,000,000 |
| Other Countries | 302,000,000 |
| Total | 2,892,000,000 |

*Silk.*—The price of raw silk is determined chiefly by the demand in the United States, which consumes nearly 80 per cent of the total world output, and by the production in Japan, which is the source of about 65 per cent of all the silk the world produces.

The demand for silk in the United States has doubled in the past decade, but the output in Japan has kept pace with the demand in the United States and the price of silk at the present time is practically no further above the pre-war price level than the average price for all commodities. The price of silk at the end of 1926 was about $5.50 per pound as compared with the five-year, pre-war average of $3.50.

It is difficult to forecast the price trend of silk because information on the prospective world output of silk is so unsatisfactory. The actual output of the various countries is never known except in the case of Italy, France and Spain, whose combined output represents only 12 per cent of the total world output. The figure that is used to represent the total world output is calculated by adding the actual European output to exports from China, Japan and other countries. The actual world output is probably considerably larger because the Japanese and Chinese consume domestically a certain amount. From July 1, 1925, to July 1, 1926, which represents the silk sea-



son, the total amount of silk produced in Europe and exported from Japan, China and other countries amounted to approximately 634,000 bales of 133 pounds each. Japanese exports from Yokohama and Kobe during the 1925–1926 season totaled 411,000 bales, or 65 per cent of the total world supply which came into sight. Chinese exports from Shanghai and Canton amounted to 123,000 bales or 20 per cent of the total. Production in Europe, which consisted chiefly of Italian silk, amounted to 80,000 bales, 12 per cent of the total. Exports from other countries amounted to about 20,000 bales, or 3 per cent of the total.

An attempt is made by the International Institute of Agriculture at Rome, however, to ascertain to some extent the probable world output of silk by gathering statistics on cocoon production. The Japanese produce two crops of cocoons, one in the spring and one in the summer and fall. The 1925 spring cocoon crop was estimated at 355 million pounds, and the fall crop at 349 million pounds, a total of 704 million pounds. The total 1926 cocoon crop was estimated at 717 million pounds, indicating an increase in the available supply during the 1926–1927 season as compared with the previous season.

During the 1925–1926 season, the United States consumed 498,000 bales, or about 80 per cent of the total world supply of 634,000 bales. The Silk Association of America issues monthly figures on imports, deliveries of silk to the mills and stocks in the warehouses of the United States, which serve as some guide to the trend of raw silk prices.

## Metals

Iron, steel and copper are the metals which deserve special consideration. Metals of less importance, but upon which industry is considerably dependent, are lead, zinc, tin, aluminum, nickel and antimony. In forecasting the price trend of metals, production figures are important.

*Lead.*—The American Bureau of Metal Statistics issues monthly figures on the world output of lead by countries. Refineries in the United States depend not only upon domestic ore but also upon foreign ore, most of which is imported from Mexico. The United States and Mexico produce over half the world output, and depend upon foreign countries to absorb part of their production. The United States, however, consumes over 40 per cent of the world production, and the demand in this country is consequently an important factor in determining the price trend. The manufacture of storage batteries accounts for 20 per cent of the lead used in the United States, and the demand for lead is thus considerably dependent upon the automobile and radio business. Paint manufacture accounts for another 20 per cent of the lead used.

*Zinc.*—The American Zinc Institute issues monthly statistics on the output of zinc in the United States, deliveries, and stocks in smelters' hands at the end of each month. The United States produces nearly half of the world output and is dependent upon foreign buying to absorb 10 to 15 per cent of the domestic production.

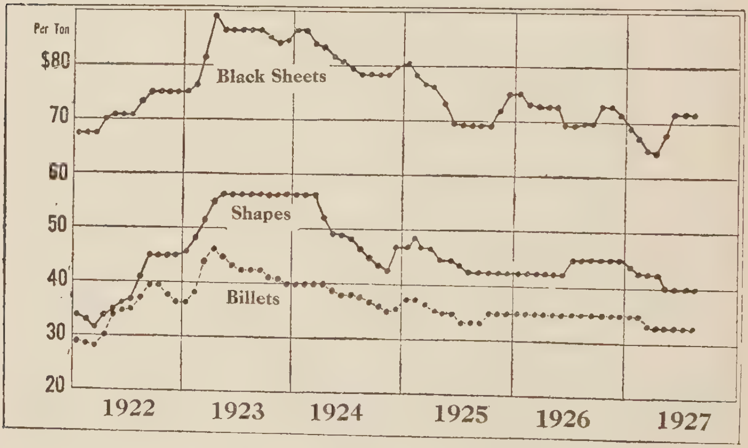
*Tin.*—The New York Metal Exchange publishes monthly figures on the world output, deliveries, and visible stocks of tin. The United States consumes about 65 per cent of the world output and has to depend entirely upon imports to meet its requirements. British Malaya is the chief source of tin. The Dutch East Indies and Bolivia furnish practically all of the balance. The world's known resources of tin are so limited that a considerable shortage is likely to be experienced in the not distant future unless new discoveries are made or some substitute can be found.

*Aluminum.*—Current statistics on the output of aluminum in the United States are not available because production is entirely controlled by the Aluminum Company of America. The United States consumes more than it produces and import figures issued by the Department of Commerce furnish some light on the situation.

*Nickel and antimony.*—The United States imports all the nickel and antimony used in this country. Nickel comes from Canada and antimony from China. A large quantity of nickel is imported in the form of ore and refined by the International Nickel Company. Monthly import figures compiled by the Department of Commerce furnish practically all the current information available on these two metals.

Metal statistics cover various stages in the process of mining and refining. The factors involved in analyzing the metal markets are illustrated in the following discussions of iron, steel and copper.

*Iron and steel.*—Steel prices have tended to move with the trend of the business cycle, but with some variations. In 1923 the steel price advance was accentuated by heavy railway buying, occasioned by the shortage of railway equipment accumulated during government control of the railways from 1917 to 1920. In 1926 steel prices failed to rally in proportion to the upward movement in trade and general prices because the railway shortage had been made up and production was in excess of current demand.



The largest consumers of iron and steel are the railroads, the building industry and the automobile industry. In forecasting the trend of iron and steel prices and production, the prospective requirements of these consumers are consequently among the chief factors to consider. The following table compiled by the *Iron Trade Review* shows the distribution of finished steel to various consuming industries in 1926, as reported by companies controlling 88.71 per cent of the country's steel ingot capacity:

Steel Distribution in 1926 (Long Tons)

*(Iron Trade Review)*

| | Tonnage | Per Cent of Total |
|---|---|---|
| Railroad track work | 4,135,000 | 12.37 |
| R.R. cars and locomotives | 2,471,000 | 7.39 |
| R.R. buildings and bridges | 993,000 | 2.97 |
| Total railroads | 7,599,000 | 22.73 |
| Automobiles | 4,921,000 | 14.72 |
| Building | 4,413,000 | 13.20 |
| Oil, gas and water | 2,197,000 | 6.57 |
| Exports | 1,783,000 | 5.33 |
| Metal containers | 1,767,000 | 5.29 |
| Mines and lumber | 1,239,000 | 3.71 |
| Agricultural equipment | 902,000 | 2.70 |
| Machinery and tools | 878,000 | 2.63 |
| Shipbuilding | 221,000 | 0.66 |
| Street railways | 196,000 | 0.59 |
| Other requirements | 7,314,000 | 21.87 |
| Total | 33,430,000 | 100.00 |

The country's theoretical capacity of steel ingot production was 56,000,000 gross tons at the beginning of 1926; the theoretical capacity of pig iron production was 45,000,000 gross tons. Monthly figures are published on the output of pig iron and steel ingots. By estimating the annual rate from the monthly figure and comparing this with the estimated capacity, the rate of activity and the state of the industry may be ascertained. The following table shows the output of pig iron, steel ingots and finished steel in 1926.

Iron and Steel Output (1926)

| | Gross Tons | Per Cent Capacity |
|---|---|---|
| Pig iron .......... | 39,100,000 | 87 |
| Steel ingots ....... | 47,100,000 | 84 |
| Finished steel ..... | 35,400,000 | 84 |

The iron and steel producing capacity was so large in 1926 that, notwithstanding a heavy demand on the part of the building and automobile industries. and a record consumption of steel, the prices of steel products failed to advance. In determining the trend of steel prices, therefore, it is not enough to consider the demand, but the demand in relation to capacity must also be taken into account.

The production of pig iron is smaller than the output of steel ingots because in the production of steel, iron and steel scrap is used in addition to pig iron. The output of finished steel amounts to about three-quarters of the steel ingot production. It is important, therefore, to differentiate between ingots and finished steel. The United States Steel Corporation's unfilled tonnage figures are in terms of finished steel.

The unfilled tonnage figures are important to watch in following the trend of the steel market. They are issued on the tenth of each month and cover the previous month's business. The Steel Corporation's capacity is about 17,000,000 tons annually, equivalent to 40 per cent of the country's total producing capacity of 42,000,000 tons of finished steel.

From the end of the War in 1918 through 1926 the largest unfilled tonnage figure recorded was 11,118,468 tons at the end of July, 1920. The smallest figure was 3,187,000 tons at the end of July, 1924. The change in unfilled tonnage figures, however, never tells the whole story as to the condition of the steel industry. Although a decline in unfilled orders suggests a slackening tendency in new business, this may not necessarily be so. The producing capacity of the Steel Corporation is so large that by working at a high rate, unfilled orders might be reduced even though business showed an increase. It is necessary, therefore, to take into account the rate of activity in connection with the unfilled tonnage reports.

Given the rate of activity, the producing capacity and the change in unfilled orders, it is possible to estimate the new business received for any month. This estimate of new orders is the best indication of the trend of the steel business. The following table shows the new bookings, shipments and change in unfilled orders of the United States Steel Corporation by months in 1926.

U. S. Steel Corporation Bookings & Shipments (1926)
(Long Tons—Finished Steel)

| Month | Bookings | Shipments | Change in Unfilled Orders |
|---|---|---|---|
| Jan. | 1,082,000 | 1,232,000 | —150,000 |
| Feb. | 957,000 | 1,223,000 | —266,000 |
| Mar. | 1,169,000 | 1,406,000 | —237,000 |
| April | 741,000 | 1,253,000 | —512,000 |
| May | 1,011,000 | 1,230,000 | —219,000 |
| June | 997,000 | 1,168,000 | —171,000 |
| July | 1,294,000 | 1,170,000 | +124,000 |
| Aug. | 1,264,000 | 1,324,000 | — 60,000 |
| Sept. | 1,177,000 | 1,126,000 | + 51,000 |
| Oct. | 1,211,000 | 1,121,000 | + 90,000 |
| Nov. | 1,197,000 | 1,073,000 | +124,000 |
| Dec. | 1,186,000 | 1,033,000 | +153,000 |
| Total 1926 | 13,286,000 | 14,359,000 | —1,073,000 |
| Total 1925 | 13,749,000 | 13,532,000 | +217,000 |

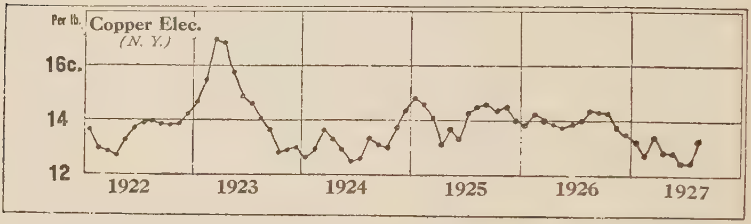
*Copper.*—The United States produces about 50 per cent of the world's output of copper, and refines nearly 75 per cent of all the copper the world uses. Over half of the world output is consumed in the United States, and the domestic ore output is consequently not sufficient to meet requirements. If it were not for the remelting of old scrap, the United States would have to depend upon ore produced in other countries to meet the home demand.

The United States, however, is a large exporter of refined copper because the refineries in this country have a capacity in excess of domestic requirements. But the amount of refined copper exported from the United States depends almost entirely upon the amount of copper ore, blister and refined copper that is imported. Therefore, the chief factors to consider in determining the price of copper are as follows:

1. The output in the United States
2. The output in Chile, which is a source of a large part of the copper imported into the United States
3. Imports into the United States
4. Domestic requirements of the United States
5. Production in countries other than the United States and Chile as an indication of the foreign demand on the United States
6. Exports from the United States.

Copper is one of the few commodities that sells at the present time at a price below the pre-war quotation. The copper-producing capacity was sharply expanded during the War because of the large demand for the metal in the manufacture of munitions. It has been necessary to maintain a low price in order to stimulate sufficient consumption to absorb the large supply of copper that can now be made available as the result of the expansion during the War. Copper producers have been able to reduce the cost of mining sufficiently to make operations profitable at a price below pre-war levels. The average price of electrolytic copper in New York in 1926 was approximately 14 cents as compared with the 1913 average of 15½ cents. The lowest price quoted in the past 20 years was 11⅛ cents in 1914 and the highest price was 37 cents in 1917.

At the present time, high cost producers are able to operate profitably when copper rises above 14 cents and their activity prevents any prolonged upward movement above this figure. On the other hand, a downward price movement is likely to be checked around 12 cents because of curtailment in production by high cost producers.



There are three distinct phases in the output of refined copper. First, there is the output of ore, known as the primary output; second, there is the output by the smelters from the ore, which is known as the blister output; and lastly, there is the refinery output from the blister supply. Statistics are issued covering the primary output, the blister output and the refined output.

In the United States the smelter or blister output is always larger than the primary output and the refined output is always larger than the blister output because of imports. The output of blister and refined copper is also increased by the remelting of scrap. Finally, the total supply of refined copper is larger than the output of refined because of imports of refined copper.

The United States in 1926, for instance, produced

872,000 short tons of primary copper, 984,000 tons of blister copper and 1,276,000 tons of refined copper. Imports of refined copper in 1926 brought up the total supply to 1,343,000 short tons. In 1926 the United States exported 428,000 tons, consumed 902,000 tons and added 13,000 tons to stocks on hand. It is apparent that in estimating the supply of copper available for domestic consumption and exports from the United States, the figure covering the total refined supply must be used and not figures merely covering the primary output or the blister output in the United States. Moreover, the total supply of refined cannot be estimated by adding imports to primary production because the remelting of scrap must also be taken into consideration.

The American Bureau of Metal Statistics compiles monthly estimates by countries of the world's output of blister copper. The total world output in 1926 was 1,628,000 short tons. The United States was the leading producer with 878,000 tons, while Chile's output was 223,000 tons. The United States and Chile, together, in 1926 produced 1,101,000 tons of copper, 68 per cent of the total world output. All other countries combined produced only 527,000 tons or less than half enough to meet their requirements. The production of copper in countries other than the United States and Chile is important to watch as an indication of the foreign demand on the United States refineries. Copper production in the Belgian Congo has been rapidly expanding since the end of the War, suggesting that the United States is facing serious competition from this source.

Since the United States consumes such a large proportion of the world's copper output, the domestic demand is an important factor in the situation. There is no method for exactly measuring the prospective domestic demand because copper is used in the manufacture of such a large variety of items. The manufacturers of electrical equipment are the largest consumers of copper, and the automobile companies also take a large amount so that a study of conditions in these industries throws some light on the prospective demand for copper. The electrical industry in recent years has shown a rapid expansion and the prospect is for a continuation of this.

The output of electricity in 1926 was 73,000,000,000 kilowatt hours as compared with 39,000,000,000 in 1919. There were over 17,500,000 telephones in the United States at the end of 1926, representing an increase of 50 per cent during the past ten years.

The simplest and most satisfactory statistics to study in following the trend of the copper market are those compiled monthly by the American Bureau of Metal Statistics on the output, exports, domestic shipments and stocks on hand of refined copper in the United States and Chile combined. The following table shows the supply and distribution of refined copper for these two countries in 1926 as compared with 1925:

Supply and Distribution of Refined Copper (Tons)
(United States and Chile)
(American Bureau of Metal Statistics)
(Twelve Months)

| | 1926 | 1925 | Per Cent Change |
|---|---|---|---|
| Stocks Jan. 1 ...... | 73,082 | 136,434 | —46.4 |
| Output ............ | 1,440,454 | 1,352,309 | + 6.5 |
| Total Supply ... | 1,513,536 | 1,488,743 | + 1.7 |
| Domestic Deliveries .. | 902,174 | 831,171 | + 8.5 |
| Exports ............ | 525,861 | 584,553 | —10.0 |
| Total Deliveries . | 1,428,035 | 1,415,724 | + 0.9 |
| Stocks Dec. 31...... | 85,501 | 73,019 | +17.1 |

# CHAPTER XIV

## INDIVIDUAL COMMODITIES (CONCLUDED)

### Building Materials

The chief materials used in buildings, in addition to the metals which have already been discussed, are lumber, brick, cement and glass.

*Brick.*—The Common Brick Manufacturers' Association of America compiles monthly statistics on stocks and unfilled orders. These statistics are not entirely satisfactory because they cover only about 30 per cent of the total brick business in the United States. The brick manufacturing capacity is in excess of the country's requirements and competition keeps the price of brick close to the production cost. The chief cost items are labor and coal, and the latter in turn is dependent upon the cost of labor. Consequently, since there is little surplus labor in the United States, it is difficult to reduce the cost of brick output when the demand is light. Curtailed consumption therefore results in a closing down of the plants rather than a cut in prices. On the other hand, when the demand is large, competition prevents any particular advance in the price.

*Cement.*—The Bureau of Mines issues monthly reports on the production, shipments and stocks of cement. The use of cement has shown a rapid expansion in recent years. Production in 1926 reached the record total of 164,000,000 barrels as compared with 92,000,000 barrels in 1913, an increase of 78 per cent. Expansion of cement producing capacity has outdistanced the growth of consumption and consequently, notwithstanding heavy demand, the price tendency has been downward. The consumption of cement has been stimulated not only by the record rate of building in recent years, but also by the demand for good roads on account of the automobiles. The Highway Bureau of the Portland Cement Association compiles monthly figures on the number of square yards of concrete pavement contracted for. Total concrete pavement contracted for reached the record figure of 107,000,000 square yards in 1926 as compared with only 39,000,000 in 1920. Roads accounted for 57 per cent of the pavement contracted for in 1926. Paving took 27.5 per cent of the cement output in 1925.

*Glass.*—The Plate Glass Manufacturers of America publish statistics on the monthly output of plate glass. The demand for plate glass depends not only upon building but also upon the automobile business. Automobiles account for over 50 per cent of the plate glass produced. Imports are also a factor in the situation. Satisfactory information on the output of window glass is not available but import figures afford some indication of the supply. The following table shows the United States output and imports of plate glass in 1926 as compared with 1925.

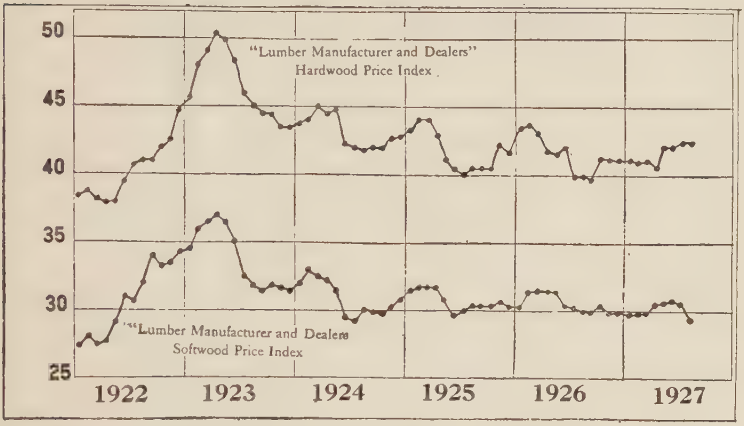
United States Output and Imports of Plate Glass (Sq. Ft.)

| | 1926 | 1925 | Per Cent Change |
|---|---|---|---|
| Output ........ | 128,858,000 | 117,223,000 | + 9.9 |
| Imports ........ | 26,664,000 | 17,257,000 | +54.5 |
| Total supply.. | 155,522,000 | 134,480,000 | +15.6 |

*Lumber.*—The chief factor to take into consideration in forecasting lumber prices is the trend of building activity. The building industry uses approximately 70 per cent of the lumber produced in the United States. About 40 per cent goes directly from the sawmill into general building construction and 30 per cent goes into building in the form of planing mill products, such as flooring, sash, doors and finish. Another factor that must be considered in forecasting lumber prices, especially long-term trend, is the rapid depletion of forest resources.

Since the general business depression in 1921, softwood prices have been firmly maintained at over double the pre-war quotations. The average price of softwood lumber before the War in 1913 was approximately $13.50 per thousand feet. According to an index compiled by the *Lumber Manufacturer and Dealer* the average price of softwood lumber reached the record high figure of $60.69 in 1920, when the general price inflation which followed the War was at its height. The sharp decline which followed carried the price down to $24.53 in 1921. Since that time the average price has been relatively well stabilized at $30. The present hardwood price level is

$40 as compared with approximately $24.50 before the War.



Partly because of the limited forest resources in the United States, production of lumber since the War has not attained any new high record, notwithstanding the record breaking activity in the building industry. The building industry has depended more heavily on the use of other building materials, such as cement, to meet requirements. The largest output of boards and planks, which is generally termed the lumber output, since the end of the War occurred in 1925 when production totaled 38,339,000,000 feet. This output, however, fell considerably short of the record cut of 44,510,000,000 feet in 1909.

The output of softwood in 1925 amounted to 31,711,000,000 feet and the hardwood output amounted to 6,628,000,000. In studying the softwood situation the chief species to consider are yellow pine, grown in the southeastern part of the United States, and Douglas Fir, grown in the northwestern part of the United States. In 1925 the output of yellow pine amounted to 13,236,000,000 feet, or nearly 42 per cent of the total softwood output. Production of Douglas Fir amounted to 8,154,000,000 feet, or nearly 26 per cent of the softwood output. These two species together made up 68 per cent of the total cut. The most important species of hardwood, all of which grow east of the Great Plains, are oak, red gum, and maple. The output of oak in 1925 totaled 2,129,000,000 feet, the output of red gum 1,101,000,000 feet, and the output of maple 922,000,000 feet. These three species made up approximately two-thirds of the total hardwood cut.

The prospect is that before many years the Douglas Fir output will exceed the yellow pine output because the yellow pine stand is now less than half the Douglas Fir stand. According to a survey made by the Government in 1920, the total lumber stand in the United States amounted to only 2,215,000,000,000 feet as compared with the original stand in the United States of 5,200,000,000,000 feet. The stand of softwoods in 1920 amounted to 1,755,000,000,000 feet and the stand of hardwoods to 460,000,000,000 feet.

The greatest depletion of the lumber resources of the United States has occurred in the East. The original stand in the East which was nearly double the original stand in the West totaled 3,400,000,000,000 feet. At the beginning of 1920 the eastern stand had been reduced to 851,000,000,000 feet. The total stand of softwoods in the East at the beginning of 1920 amounted to only 291,000,000,000 feet, two-thirds of which consisted of yellow pine.

The depletion of the lumber stand in the West has been relatively slight as compared with depletion in the East. Out of the original stand of 1,800,000,000,000 feet, at the beginning of 1920 there remained 1,364,000,000,000 feet, nearly 45 per cent of which consisted of Douglas Fir.

The total amount of wood cut or destroyed annually at the present time is equivalent to 60,194,000,000 feet. It will be noted that the total amount of wood taken from our forests each year is considerably greater than the lumber output as reported by the sawmills. This is explained by the fact that a part of the wood does not reach the sawmills but is used for fuel wood, pulp wood or is wasted or destroyed by fire or insects. At the present time, the annual new growth amounts to less than 10,000,000,000 feet to offset the drain of over 60,000,000,000 feet. This means an annual depletion of 50,000,000,000 feet per year, a sufficient rate to exhaust our forest resources completely by the end of 1963. Serious steps, however, are now being taken to conserve our forests and it is likely that in time the new growth will be increased sufficiently to offset the cut to a much larger extent than at the present time. The following table shows the rate of depletion for both hardwood and softwood at the present time:

Timber Supply and Consumption in the United States
(Millions of Board Feet)

| | Stand Jan. 1, 1920 | Annual Drain | Annual New Growth | Annual Net Drain | Years Supply Will Last |
|---|---|---|---|---|---|
| Softwood .......... | 1,755,000 | 41,058 | 4,770 | 36,288 | 48 |
| Hardwood ........ | 460,000 | 19,136 | 5,104 | 14,032 | 33 |
| Total ......... | 2,215,000 | 60,194 | 9,874 | 50,320 | 44 |

## Fuels

The consumption of coal in the United States during the past ten years has failed to show an expansion in proportion to the growth of the country. Increased fuel requirements for power and heat have been met by a larger use of petroleum, natural gas and electricity produced by water power. The prospect is that electricity produced by water power will continue to expand at the expense of the coal business. At the present time, water power furnishes the United States with only 11,000,000 horsepower out of a possible total of 70,000,000 horsepower.

*Bituminous coal.*—The price trend of bituminous coal in the United States depends chiefly upon the domestic demand. Factories and the railroads are the largest consumers of bituminous coal, and consequently in determining its prospective demand, the outlook for industrial activity is the principal factor to consider.

The most satisfactory means of following the price trend of coal is by use of the price average compiled by *Coal Age,* covering fourteen coals representative of nearly 90 per cent of the total output in the United States. The average 1913 price was $1.23 per ton. The highest monthly average reached since that time was $9.41 in August, 1920. The lowest monthly average reached since the end of the War was $1.90 in June, 1926.

The Bureau of Mines, a division of the Department of Commerce, issues weekly reports on bituminous coal output. During 1926 the weekly output ranged from 8,306,000 tons in July to 14,676,000 tons in December. The December figure was the highest on record. During the past decade the production trend of bituminous coal has been sidewise. Production in 1926 totaled 578,000,000 tons, a figure slightly below the record 1918 output of 579,000,000 tons. Failure of bituminous coal output to keep pace with the increase in industrial activity has been due to the use of fuel oil and electricity produced by water power. Keen industrial competition has resulted in economizing on fuel in the attempt to reduce manufacturing costs to the lowest possible level.

The bituminous coal mining capacity of the United States is greatly overdeveloped. Consequently, a rise in coal prices due to a quickening demand is not of long duration. Advancing prices soon stimulate overproduction and a reactionary price movement. It is probable that 16,000,000 tons could be mined per week, or 832,000,000 tons per year. The record output in 1918 represented less than 70 per cent of this capacity. Pennsylvania is the chief bituminous coal producing state in the country, followed closely by West Virginia. In 1926 Pennsylvania produced 151,000,000 tons; West Virginia, 147,000,000 tons; Illinois, 70,000,000 tons; Kentucky, 63,000,000 tons; and Ohio, 29,000,000 tons. Production in these five states represented 80 per cent of the total output, all other states combined producing only 118,000,000 tons, or 20 per cent of the total.

The labor situation is a factor that has to be especially watched in analyzing the bituminous coal situation. Mines representing about 60 per cent of the total coal producing capacity are manned by union laborers. When these miners strike, the nonunion mines, most of which are located in West Virginia, are not able to meet the requirements of the United States, and consequently during such a strike, coal prices show a sharp advance. There is continual friction between the union operators and laborers, and strikes are relatively frequent. Wages represent about 70 per cent of the cost of mining coal, and union operators consequently have a difficult time in competing with nonunion mines with lower wage scales. The amount of coal consumed above the capacity of the nonunion mines represents less than half the capacity of the union mines, and union operators have difficulty in keeping their mines working at a profitable rate. Union operators are consequently not only opposed to higher wages, but are always endeavoring to reduce wages, which naturally results from time to time in long-drawn-out strikes.

Although the United States produces 40 per cent of the total world output of coal, only a relatively small amount is exported, mainly to Canada. Usually, the export situation does not need to be given much consideration in forecasting coal prices. During 1926, however, due to the British coal strike, exports from the United States showed a sufficient increase to cause a temporary advance in prices. Exports from the United States in 1926 totaled 31,500,000 tons as compared with 15,600,000 tons in 1925, but even in 1926 exports represented only slightly more than 5 per cent of the total output of the United States.

Great Britain usually produces about 20 per cent of the total world output and is the world's largest exporter of coal. Consequently, a strike in Great Britain not only affects that country but other countries, such as Italy, as well.

*Anthracite coal.*—Anthracite coal prices fluctuate within a narrow range. Consumption of anthracite coal is naturally heaviest during the winter months and consequently the market shows a tendency to strengthen in the fall and to ease in the spring.

The labor situation is the chief factor to watch in the anthracite industry. All of the anthracite coal produced in the United States is mined in Pennsylvania. All the miners belong to the union, and the supply of anthracite is entirely cut off during a strike, which naturally results in a sharp advance in prices. The miners work under a wage contract with the operators, and when a decline in demand occurs, the operators are not able to reduce prices to any extent by a reduction in the cost of mining which depends chiefly upon wages. The only alternative is to curtail the output.

Demand for anthracite coal is not sufficient at any time to tax mine capacity to such an extent that operators are able to advance prices conspicuously. Anthracite coal has to compete with bituminous coal and fuel oil. The present level of wages makes it necessary to sell coal at double the pre-war price, and consequently, an upward trend of prices from this relatively high level causes in a short time a substitution of other fuels and a curtailment in the demand for anthracite. The high wage level in anthracite mines has prevented an expansion in the consumption of anthracite coal during the past twenty years. Production of anthracite coal in 1926 was 85,000,000 tons, practically the same amount that was mined in 1907. The per capita consumption is considerably lower now than it was twenty years ago.

*Petroleum.*—In analyzing petroleum for the purpose of forecasting prices, demand and output in the United States are the two chief factors to consider. The United States consumes over two-thirds of the total world output, and produces over 70 per cent of the total.

Crude petroleum requirements are determined chiefly by the demand for gasoline. At the beginning of the year the consumption of gasoline for that year may be roughly estimated by dividing domestic consumption during the previous year by the number of motor cars registered that year, and then multiplying this figure by the prospective number of automobiles that will be registered during the coming year. To this figure, representing the prospective domestic consumption in the United States, an estimate of exports should be added to give total prospective requirements. Exports for the coming year may be estimated from the previous year's exports, allowing for some reasonable increase as indicated by the rate of increase in previous years. After estimating gasoline requirements for the coming year, it is possible to compute the amount of crude oil that will be required. In 1926 gasoline output amounted to 38.3 per cent of the total crude oil run to stills, while the amount of oil run to stills represented about 93 per cent of production, the balance of crude being either wasted or used as fuel without refining. By using these percentages, the prospective consumption of crude oil for the coming year may be worked out from prospective gasoline requirements.

There is one other factor, however, that must be taken into consideration in estimating the consumption of crude petroleum, and that is the tendency for the percentage of gasoline obtained from the crude oil to increase. In 1926, for instance, gasoline output represented 38.3 per cent of the crude run to stills as compared with only 35.1 per cent in 1925. After the crude oil is separated into gasoline, kerosene, lubricating oil, wax and other products, the supply of gasoline may be further increased by "cracking" fuel oil. While this increases the supply of gasoline, it decreases the supply of fuel oil. During recent years it has been profitable to crack an increasing quantity of fuel oil because the demand for gasoline has expanded faster than the demand for fuel oil. The output of crude petroleum has not shown a sufficient rate of increase to meet requirements without cracking fuel oil. Since the supply of easily available petroleum in the United States is apparently limited, the prospect over the long-term trend is that an increasing amount of fuel oil will be used for cracking purposes. This tendency will be further stimulated by the prospect of a steadily increasing demand for gasoline. Consumption of fuel oil will tend to be curtailed because the heavy demand for gasoline will make for such a high level of fuel oil prices that it will not be successful in competing extensively with coal and with electricity produced by water power.

The Department of Commerce issues monthly reports on crude petroleum, gasoline, fuel oil, kerosene, lubricating oils and other petroleum products which should be followed as a guide in determining the future trend of prices. These reports contain statistics covering production, consumption, imports, exports and stocks on hand of the various petroleum products. In addition to these reports, the weekly reports on crude petroleum output issued by the American Petroleum Institute and the *Oil and Gas Journal* should be followed for up-to-date information.

The consumption of crude petroleum in the United States in 1926 was the highest on record, totaling approximately 840,000,000 barrels. Of this amount, petroleum run to stills amounted to 782,600,000 barrels. Production of fuel oil amounted to 365,200,000 barrels, or 46.7 per cent of the total quantity run to stills. The output of gasoline amounted to 299,700,000 barrels, or 38.3 per cent of the total. The output of kerosene amounted to 61,800,000 barrels, or 7.9 per cent of the total. The output of lubricating oils amounted to 32,300,000 barrels, or 4.1 per cent of the total. The remaining 3 per cent was either consumed in the production of other petroleum products or wasted.

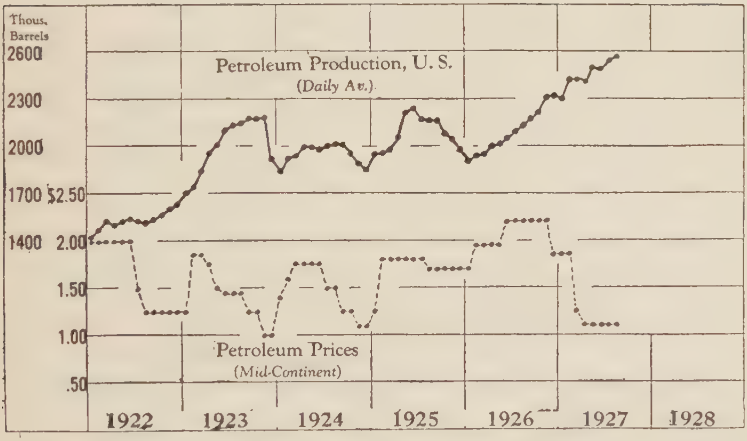
In addition to the domestic output of gasoline, imports amounted to 6,100,000 barrels, affording a total supply in 1926 of 305,800,000 barrels. Domestic consumption of gasoline in 1926 amounted to 262,100,000 barrels, and exports amounted to 43,500,000 barrels, resulting in total deliveries of 305,600,000 barrels or slightly less than the total supply. Stocks of gasoline on hand during 1926 increased from 38,800,000 to 39,000,000 barrels.

Output of crude petroleum in the United States in 1926 reached the record figure of 766,500,000 barrels, representing only a slight increase over the 1925 output of 763,700,000 barrels, but an increase of over 100 per cent since the end of the War. In 1925, the latest year for which figures are available, the United States produced 71.5 per cent of the world output; Mexico, 10.8 per cent of the total; Russia, 4.9 per cent; Persia, 3.3 per cent; the Dutch East Indies, 2 per cent; and all other countries combined, only 7.5 per cent.

In the United States, there are eight petroleum-producing fields. The mid-continent field with Oklahoma as the chief producing state is the heaviest producer. California is the second heaviest producer, and these two fields in 1926 produced 84.3 per cent of the country's total. The mid-continent field produced 55.1 per cent, the California field 29.3 per cent, while the Appalachian, Lima-Indiana, Michigan, Illinois and southwestern Indiana, Gulf Coast and the Rocky Mountain fields, combined, produced only 15.6 per cent of the total.

In addition to domestic output imports should receive consideration. In 1926 the United States imported 60,400,000 barrels, mostly from Mexico, affording a total supply of 826,900,000 barrels. Exports of crude petroleum amounted to 15,400,000 barrels, resulting in a net supply of 811,500,000 barrels. Notwithstanding the record output in 1926, however, the supply was not sufficient to meet requirements and stocks on hand were reduced during the year.

It is difficult to estimate for a year ahead the probable output of crude petroleum in the United States. If stocks on hand are low at the beginning of the year and prices are high, increased activity in the drilling of oil wells may be expected. On the other hand, if stocks are high and prices low, the tendency will be to curtail drilling. But the output of oil depends not only upon the number of wells drilled but also upon the kinds of wells that are discovered. If they turn out to be flush wells such as those in the Seminole district in Oklahoma at the end of 1926, overproduction is likely to occur.



The resources of easily available petroleum in the United States are relatively limited. The American Petroleum Institute estimates that the original oil resources of the United States from which production is possible by present methods are approximately 13,200,000,000 barrels. The total output in the United

States since the discovery of oil amounted to 9,425,000,000 barrels at the end of 1926. At the beginning of 1927 there were apparently only 3,775,000,000 barrels remaining which could be taken out of the ground by present methods, or only enough for five years at the present rate of consumption. It is probable, of course, that new discoveries will be made, but the prospect is rather unfavorable that new discoveries will increase the supply of easily available oil to a relatively large extent.

The American Petroleum Institute estimates that when flowing and pumping in present fields shall have ceased, there will still remain 26,000,000,000 barrels that can be recovered by other methods. The oil shale of Colorado, Utah and Wyoming should yield 111,000,000,000 barrels. The bituminous coal and lignite reserves could yield from 500,000,000,000 to over 2,000,000,000,000 barrels of liquid fuel. The expense of production will be greater, but it is apparent that oil from oil shale alone will be sufficient to meet requirements for at least a century. It is probable that, in time, machinery will be perfected that will produce oil from oil shale at relatively reasonable prices.

## Miscellaneous Commodities

*Paper.*—Statistics of paper production afford the principal means of following the paper market. Monthly figures are issued by the American Paper and Pulp Association, in cooperation with the Binders

Board Manufacturers' Association, Converting Paper Mills Association, Cover Paper Association, Newsprint Service Bureau, Writing Paper Manufacturers' Association and Paperboard Industries Association. With the exception of the figures on newsprint compiled by the Newsprint Service Bureau, paper statistics are not entirely satisfactory because they cover only a part of the total output. In the case of all grades of paper except newsprint the output in the United States is the chief factor to consider. Exports and imports are relatively small. In the case of newsprint, the Canadian output is an important factor. Most of the Canadian output is imported by the United States. The outstanding feature of the paper industry in recent years has been the conspicuous expansion in Canadian output of newsprint. Canada produced 1,882,000 tons in 1926 as compared with only 807,000 tons in 1919. Canada's output in 1926 for the first time exceeded that of the United States.

*Tobacco.*—In forecasting the trend of tobacco prices, crop reports on the probable yield in the United States issued by the Department of Agriculture during the growing season are important to watch. Other factors influencing the price are exports from the United States and domestic consumption.

The following table shows the yields in the United States, and the percentage exported for a number of years:

United States Tobacco Crops and Exports (Pounds)

| | Yield | Exports | Per Cent Exported | Farm Value Per lb. (Cents) |
|---|---|---|---|---|
| 1926 ...... | 1,321,000,000 | 517,000,000 | 39.1 | 18.5 |
| 1925 ...... | 1,377,000,000 | 537,000,000 | 39.0 | 18.4 |
| 1924 ...... | 1,251,000,000 | 431,000,000 | 34.5 | 20.7 |
| 1923 ...... | 1,515,000,000 | 598,000,000 | 39.5 | 19.9 |
| 1922 ...... | 1,247,000,000 | 454,000,000 | 35.2 | 23.2 |
| 1921 ...... | 1,069,000,000 | 463,000,000 | 43.3 | 19.9 |
| 1920 ...... | 1,582,000,000 | 507,000,000 | 32.1 | 21.2 |
| 1919 ...... | 1,465,000,000 | 648,000,000 | 44.2 | 39.0 |
| 1909–13 av. | 996,000,000 | 392,000,000 | 39.4 | 10.4 |

The Bureau of Internal Revenue of the United States Treasury Department furnishes monthly figures on tax-paid withdrawals of smoking tobacco, cigars and cigarettes. The consumption of tobacco and cigars has declined during the past decade, but the consumption of cigarettes has shown a remarkable increase. Consumption of cigarettes in 1926 amounted to 89,000,000,000 as compared with only 25,000,000,000 in 1916.

*Hides and leather.*—Boot and shoe production is the chief factor in the consumption of hides and leather. Of a total of 126,000,000 hides and skins tanned in 1926, approximately 97,000,000 or 77 per cent of the total was used in the manufacture of shoes. The Department of Commerce issues monthly reports on the output of shoes. The following table shows the annual production in the United States for a series of years:

Boot and Shoe Output in the United States

| | | |
|---|---|---|
| 1926 | 324,514,000 | pairs |
| 1925 | 323,553,000 | " |
| 1924 | 313,230,000 | " |
| 1923 | 351,114,000 | " |
| 1922 | 323,876,000 | " |
| 1921 | 286,771,000 | " |
| 1919 | 331,225,000 | " |
| 1914 | 292,666,000 | " |

At the present time women's shoes rank first in the number produced. The output of women's shoes has shown a marked increase since pre-war days. This increase has been due not only to the increase in population but to the change in the style of women's clothing. The short skirt has made the shoe a considerably more conspicuous part of the women's attire. The output of men's shoes, on the other hand, is smaller now than before the War, notwithstanding the increase in population. The following table shows trends in production since 1914.

Boot and Shoe Output by Classes (Pairs)

| | 1926 | 1914 | Per cent Increase |
|---|---|---|---|
| Women's | 110,447,000 | 80,916,000 | +36.5 |
| Men's | 86,644,000 | 98,031,000 | —11.6 |
| Misses' and Children's | 38,577,000 | 48,322,000 | —20.1 |
| Infants' | 24,041,000 | 15,477,000 | +54.8 |
| Boys' and Youths' | 21,110,000 | 22,896,000 | — 7.9 |
| All Others * | 43,695,000 | 27,024,000 | +61.9 |
| Total | 324,514,000 | 292,666,000 | +10.9 |

* "All Others" include such items as athletic shoes and slippers for housewear. In 1926 the output of slippers totaled 24,777,000, or over half the miscellaneous class.

The price trend of shoes may be followed from monthly reports issued by the Department of Labor. The average wholesale price of men's black calf blucher shoes at Boston in 1926 was $6.40 per pair as compared with $3.11 before the War in 1913. The average price of men's dress welt tan calf shoes at St. Louis was $4.92 per pair in 1926 as compared with $3.17 in 1913.

The advance in the price of shoes during the past decade has been due principally to the necessity of paying higher wages. Cattle hides at the present time are below the pre-war price level. The price of leather is approximately the same as before the War. Wages are double.

The failure of hide and leather prices to show the same advance over the pre-war level as in the case of most other commodities has been due to an oversupply. Hides are a by-product of the meat industry. The demand for meat has outstripped the demand for hides and the hide output has exceeded normal requirements.

The United States, however, does not yet produce a sufficiency of hides to meet the domestic demand. But the import demand has declined, and exporting countries have suffered from a burdensome surplus. The United States is less dependent on foreign countries for cattle hides than for other classes of hides and skins. Imports of cattle hides in 1926 represented only 15 per cent of domestic consumption. Nearly 50 per cent of the calf skins and 75 per cent of the sheep skins consumed were imported. Approximately all of the goat skins were imported because few goats are raised in the United States.

The Department of Commerce issues detailed statistics each month on the stocks of hides and leather on hand, imports and consumption of hides, and the production of leather.

In the case of leather made from cattle hides the unit generally used in the report is the side. The number of hides can be roughly computed by dividing the number of sides by 2. In the case of leather made from calf, kip, goat, kid, sheep and lamb skins, the unit is the whole skin. Cattle hides, calf, kip, goat, kid, sheep and lamb skins represent nearly 95 per cent of all the hides and skins consumed in the manufacture of leather in the United States. The remaining 5 per cent includes such items as horse hides, deer, elk, kangaroo and seal skins.

Over half the cattle hides consumed in the manufacture of leather are used in producing upper leather, including patent. In 1926 upper and patent leather accounted for 54.6 per cent of the total number of cattle hides used; sole leather, 30.8 per cent; bag, case and strap leather, 2.7 per cent; harness leather, 2.6 per cent; and miscellaneous leather, 9.3 per cent. Sole and upper leather combined, or total shoe leather, accounted for 85.4 per cent. The following table shows the production of leather from cattle hides in 1926 and 1925, and percentage changes in the principal items.

Output of Leather from Cattle Hides
(Number of Hides Used)

| | 1926 | 1925 | Per Cent Change |
|---|---|---|---|
| Upper, including patent.. | 12,077,000 | 11,983,000 | +0.8 |
| Sole .................. | 6,808,000 | 7,439,000 | —8.5 |
| Bag, case, strap ........ | 592,000 | 588,000 | +0.7 |
| Harness .............. | 585,000 | 644,000 | —9.2 |
| Miscellaneous * ........ | 2,044,000 | 2,074,000 | —1.5 |
| Total ............... | 22,106,000 | 22,728,000 | —2.7 |

* Miscellaneous leather includes such items as skirting, collar, latigo, lace, glove, fancy and bookbinders', rough, rough belting butts, upholstery and machine buffed.

Over 95 per cent of the calf and kip skins in 1926 was used in the manufacture of upper and patent leather. The balance was approximately all used in the manufacture of fancy and bookbinders' leather.

Output of Leather from Calf and Kip Skins
(Number of Skins Used)

| | 1926 | 1925 | Per Cent Change |
|---|---|---|---|
| Upper, including patent | 15,033,000 | 13,626,000 | + 10.3 |
| Fancy and bookbinders' | 705,000 | 250,000 | +182.0 |
| Miscellaneous ........ | 6,000 | 2,000 | +200.0 |
| Total ............. | 15,744,000 | 13,878,000 | + 13.4 |

Over 98 per cent of the goat and kid skins in 1926 was used in the manufacture of upper and patent leather. The balance was used for fancy, bookbinders' and glove leather. The following table shows the output of leather from goat and kid skins in 1926 and 1925.

Output of Leather from Goat and Kid Skins
(Number of Skins Used)

| | 1926 | 1925 | Per Cent Change |
|---|---|---|---|
| Upper, including patent | 48,919,000 | 41,878,000 | + 16.7 |
| Fancy and bookbinders' | 664,000 | 540,000 | + 23.0 |
| Glove ............... | 193,000 | 67,000 | +188.0 |
| Total ............. | 49,776,000 | 42,485,000 | + 17.2 |

The percentage of sheep and lamb skins used in the manufacture of upper leather is less than in the case of other classes of hides and skins. In 1926 upper leather accounted for 44.1 per cent of the sheep and lamb skins used; glove leather, 16.7 per cent; fancy and bookbinders' leather, 7.5 per cent; and miscellaneous leather, 31.7 per cent. The following table shows the output of leather from sheep and lamb skins in 1926 and 1925.

Output of Leather from Sheep and Lamb Skins
(Number of Skins Used)

| | 1926 | 1925 | Per Cent Change |
|---|---|---|---|
| Upper ............... | 13,973,000 | 14,124,000 | — 1.1 |
| Glove ............... | 5,297,000 | 5,326,000 | — 0.5 |
| Fancy and bookbinders' | 2,369,000 | 1,984,000 | +19.4 |
| Miscellaneous ......... | 10,026,000 | 11,655,000 | —13.9 |
| Total .............. | 31,665,000 | 33,089,000 | — 4.3 |

Of the total number of all hides and skins used in the manufacture of leather, approximately 77 per cent is used for shoe leather, 11 per cent for fancy and bookbinders' leather, 7 per cent for glove leather, 4 per cent for belting, bag, harness and upholstery leathers and 1 per cent for miscellaneous leather.

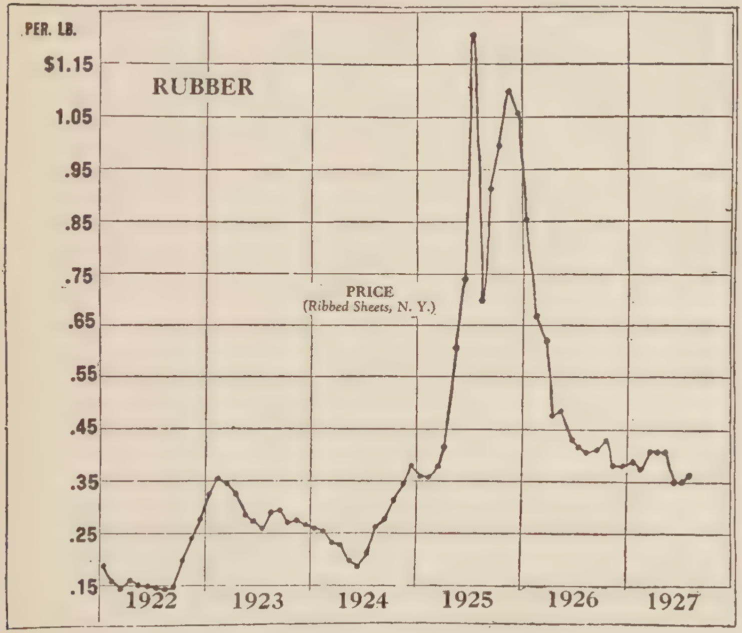
The factors to watch in connection with the supply of hides and leather are stocks on hand, number of live stock on farms, domestic slaughter and imports of hides. The factors to be considered in the domestic supply and slaughter of live stock have already been discussed under the heading of Pork, Beef and Lamb. The following table shows the number of cattle hides, calf, kip, goat, kid, sheep and lamb skins consumed in the manufacture of leather in 1926 and the proportion imported.

Consumption and Imports of Hides and Skins in 1926
(Number of Hides and Skins)

| | Consumption | Imports | Per Cent Imported |
|---|---|---|---|
| Cattle hides .......... | 22,106,000 | 3,360,000 | 15.2 |
| Calf and kip skins ..... | 15,744,000 | 7,587,000 | 48.3 |
| Goat and kid skins ..... | 49,776,000 | 53,498,000 | 107.4 |
| Sheep and lamb skins .. | 31,665,000 | 23,768,000 | 75.0 |
| Total .............. | 119,291,000 | 88,213,000 | 74.1 |

Cattle hides coming to market during the first part of the year are of poor quality and unless the supply is abnormally small the tendency at this time is for price concessions.

*Rubber.*—The price of rubber depends chiefly upon the consumption requirements of the United States and production in the East Indies. The United States uses approximately two-thirds of all rubber produced. The East Indies produce nearly 95 per cent of the total world output. Consumption of rubber in the United States depends chiefly on the demand for automobile tires, which accounts for about 85 per cent of the total consumed. The supply of rubber available from the East Indies depends upon the number of trees in bearing, and whatever export restrictions the British wish to impose. The British control about 70 per cent of the plantations in the East Indies; the Dutch control practically all of the remaining 30 per cent. Rubber raised in Indo-China under the French is of a negligible quantity.



Rubber in 1920 was a good illustration of the depressing effect of overproduction on prices. Notwithstanding the price inflation that followed the War, which caused a sharp advance in nearly all commodities, the price of rubber declined. This was the result of a sharp increase in output, and a heavy accumulation of stocks on hand, due to the large number of trees, planted five years earlier, reaching a productive stage. In June, 1921, rubber was quoted at 13½ cents, as compared with an average of 75 cents in 1913. In July, 1925, the price of rubber reached $1.22 a pound as a result of restriction on exports from the British plantations and a sharp increase in requirements in the United States as a result of the large output of automobiles. As the result of the high price reached in 1925, the British increased the exportable allowance, the United States economized on consumption, and by December, 1926, the price of rubber had declined to 36¾ cents. The price in December, 1926, was below the minimum price of 42 cents which the British think they should receive for their rubber, and consequently the British again placed restrictions on exports from the plantations.

The prospective demand for rubber in the United States in any given year may be roughly calculated from the number of automobiles in the country and the probable output of new automobiles during the year under consideration. The annual rate of tire replacements on old cars is approximately two and one-quarter casings per car. Requirements for new cars may be estimated at five casings per car. Tires manufactured for export should also be taken into consideration, although relatively few are sent abroad. The total output of casings in the United States in 1926 was 61,500,000, while exports amounted to only 1,500,000. After estimating the number of tires that will be produced, the amount of rubber that will be consumed in their manufacture may be calculated by multiplying the number of tires by 8½ pounds, the average amount of rubber used per casing. Rubber used in the manufacture of casings represents about 65 per cent of the total rubber consumed in the United States, and the total consumption can thus be estimated by multiplying the quantity used for casings by $\frac{100}{65}$.

Consideration should also be given to the increasing use of reclaimed rubber. The output of reclaimed rubber rose from 34,000 tons in 1921 to 170,000 tons in 1926. Although rubber requirements of the United States were larger in 1926 than in 1925, a smaller amount of crude rubber was consumed because of the larger output of reclaimed. The United States consumed 366,000 long tons of crude rubber in 1926 as compared with 389,000 long tons in 1925.

After estimating the probable consumption of rubber in the United States, the next important factor to consider in forecasting the price trend is the amount of rubber that will be available to meet requirements in the United States. The world production can be roughly estimated from the tappable acreage in the East Indies. Since it requires five years for a rubber tree to reach the productive stage, the probable acreage consists of all land that contains trees which have been growing for five years or longer. New trees come into bearing each year, and the increase in the output of rubber over the previous year can be estimated from the number of acres planted five years before.

The total amount of rubber that can be produced, however, does not necessarily measure the supply that will be available for consumption because of the British policy of restricting exports when the price falls below a specified level. It is probable that if output were unrestricted in 1927 total world production would amount to nearly 700,000 long tons. The British plantations in Malaya and Ceylon could produce 400,000 tons, the Dutch East Indies 200,000 tons and other countries 100,000 tons. Such a supply of rubber would be more than sufficient to meet world needs, and would argue for a downward tendency of prices. Because of the British restriction policy, however, exports from Malaya and Ceylon are likely to be much less than indicated by the figure of the total possible production. Under restriction, exports from these British plantations might not amount to much over 260,000 tons in 1927 as compared with possible exports of 400,000 tons. Hence it is necessary to make allowance for the operation of the British restriction scheme in estimating the total supply of rubber available for consumption in a given year. Under restriction, the total world supply exported from producing countries might not amount to more than 560,000 tons as compared with possible exports, without restrictions, of 700,000 tons. Under restriction, exports from producing countries would not be sufficient to meet the world's needs, not only arguing against a downward trend of prices as indicated by the possible total output, but suggesting a possible advance, provided stocks in the hands of consumers were not sufficient to offset the curtailment in British exports. Stocks in the hands of consumers at the beginning of 1927 were sufficiently heavy to prevent the British restriction policy from imparting to the rubber market immediate strength.

For the three months beginning November 1, 1926, the British reduced the exportable allowance from Malaya and Ceylon from 100 to 80 per cent of standard production, of approximately 400,000 tons, because the average price of rubber during the preceding quarter had averaged below 42 cents a pound. The restriction act provided that if the price averaged below 42 cents a pound during the quarter beginning November 1, 1926, and ended February 1, 1927, the exportable allowance would be reduced to 70 per cent, and that if the price continued to average below 42 cents during the quarter ended May 1, 1927, the exportable allowance would be reduced to 60 per cent. The restriction act provided that exports from then on would be maintained at

60 per cent until the price averaged 48 cents for a a quarter or failed to drop below 42 cents for three consecutive quarters. The exportable allowance would then be increased 10 per cent of standard production per quarter until it reached 80 per cent and then it would be increased to 100 per cent. It is necessary, however, for the average price to hold up above the specified level to permit the steady quarterly increase in the exportable allowance. Should the average price fall below the specified price level, the exportable allowance would again be reduced. The British rubber growers can export more rubber than specified by the government by paying a tax determined by the amount of rubber which they export in excess of the specified quantity, but the tax is so heavy that planters generally keep within the exportable allowance.

The amount of rubber that will be available for consumption in the United States in any given year can thus be determined from a consideration of the probable world output as modified by the British restriction act. Consideration must also be given to the demand by countries other than the United States. At the present time countries other than the United States are using about one-third of the supply. The United States is consuming crude rubber at the rate of 400,000 tons a year and all other countries at the rate of 200,000 tons a year.

# CHAPTER XV

## PLANS FOR PREVENTING THE EVILS OF PRICE FLUCTUATIONS

Several hundred years ago a wealthy owner of an English estate founded a scholarship at Oxford University in support of which he agreed to donate annually a certain number of bushels of wheat. Over a long period of years this was probably better than to guarantee a certain money income. In case the King became overburdened with debt and decided to reduce the weight of the coinage, thereby causing an increase in the money cost of necessaries, the student-scholar would not suffer. The price of wheat would advance in proportion to the general level of prices, and the student could continue his studies without fear of financial embarrassment. This would also hold true when the paper money circulation was inflated as during the Seven Years' War or the Napoleonic wars. If the cost of living increased 100 per cent, the price of wheat would increase enough to offset the higher living expenses of the student.

### Gold an Inadequate Standard of Value

The inadequacy of gold as a standard of value has been illustrated in connection with the Rhodes Scholarships established at Oxford by the late Cecil

Rhodes. Each scholarship provided an annual income to the student of about $1,500 per year. Since they were established, however, the cost of living in England has increased over 50 per cent and it has been found necessary to arrange for an increase in the annual Stipend.

The State of Massachusetts during the Revolutionary War found it necessary to abandon gold and silver coins as the standard of value and to substitute other commodities. In 1780, prices were greatly inflated after excessive issues of paper money by the Continental Congress. This currency had become practically worthless. The State of Massachusetts, nevertheless, was obliged to finance the State's quota of continental troops during the last year of army operations. It was voted to issue interest-bearing notes, payable in whatever currency might be in circulation at maturity in terms of the current value of certain quantities of staple commodities. A specimen of this issue of notes recently exhibited in a collection of paper money in the possession of the Chase National Bank of New York, reads as follows:

> Prices in 1780 are 32½ times the prices mentioned in a law of Massachusetts in the year 1777. Upon maturity of this note, if paper money is further depreciated, or if the gold standard is restored, payments will be made in current money with reference to the prevailing value of five bushels of corn, 68 4/7 pounds of beef, 10 pounds of wool and 16 pounds of sole leather. The current value of these commodities will determine the payment of both principal and interest.

A decade later, France was confronted with a similar problem, when paper money was issued in excessive amounts during the French Revolution. As debts matured and were paid, creditors found themselves defrauded owing to the decline in the value of the franc. The government attempted to meet the situation by fixing an adjusted scale of compensation, the principal of the debt to be increased to offset the decline in the value of money. The currency conditions, however, became so chaotic that all schemes to insure justice between creditor and debtor had to be abandoned as hopeless.

During the American Civil War, no attempt was made to secure justice between private parties when the gold standard was abandoned and excessive issues of paper money caused a decline in the value of the dollar. In order to induce investors to buy government bonds, however, it was deemed necessary to guarantee the payment of interest on certain bond issues in gold. When paper money depreciated one-third, the holder of $1,000 of 6 per cent bonds received interest at the rate of $90 annually, the equivalent of $60 in gold. The railroads also found it necessary to issue "gold bonds" while the country remained on a paper money basis and also during the period of "free silver" agitation from 1878 to 1896. This was especially necessary to attract European capital.

Since the recent World War, millions of creditors have been defrauded by changes in the value of money. In Germany, many debts were paid off during 1920–1923 with currency worth, in gold, less than 1 per cent of the face value of the debt. This fact has been recognized by the German government, which has required a reconsideration of certain classes of debt payments to the extent that the defrauded creditor has been given a claim against the former debtors equal to about 15 per cent of the debt. In France nothing has been done to secure justice to creditors who have been defrauded out of part of their original principal. In July, 1925, however, the French government offered an issue of bonds in connection with which it was provided that interest would be payable at the rate of about 5 cents per franc. When the franc declined to 3 cents, a bondholder nominally entitled to 1,000 francs received 1,666 francs. This increased amount of paper francs offset the lower purchasing power of French money.

In the interest of trade stability, France and Italy sooner or later will have to follow the lead of Germany and Great Britain and restore the gold standard. But the restoration of the gold standard alone will not guarantee stability for the future. The purchasing power of the American gold dollar in 1926 was about 63 per cent of the 1913 basis and only 45 per cent of the commodity value of the dollar of thirty years ago. If serious dislocation of economic relations is to be prevented in the future, something must be done to minimize the fluctuations in the exchange value of gold.

During the five years, 1921–1925, the amount of new life insurance written in the United States exceeded $5,000,000,000. When the policies mature and are paid off, will the beneficiaries receive dollars which are of the same value as the dollars paid annually to the companies by the policyholders? During these five years, investors subscribed new capital for issues of stocks and bonds totaling $28,000,000,000. Will these investors be benefited or injured by future changes in the value of the dollar?

Gold has never been a satisfactory standard of value, as the wild fluctuations in prices of the past century have demonstrated. It is an excellent medium of exchange. Among commodities, it is by far the best "medium of exchange" from the standpoint of portability, durability, divisibility, and salability. But gold lacks "stability in value", and will not be a good standard of value, so long as its relation to other commodities fluctuates uncontrolled except by the law of supply and demand. The total value of the annual output of gold is only a small fraction of the value of the annual production of all commodities. It seems almost barbarous that the prices of all other commodities and, to a large extent, the economic welfare of society shall be continually prejudiced by uncontrolled fluctuations in the supply of gold. For decades at a time, there will be too little gold to support the price structure for all other commodities; then, at other times, there will be an excessive amount of gold produced and economic relations will be dislocated.

The solution of the problem is either to change the weight of the dollar occasionally so as to stabilize prices, or to continue the dollar at a fixed weight and regulate the output of gold by arbitrary strong-handed methods.

## Lehfeldt's Plan to Control Gold Production

Professor R. A. Lehfeldt of Johannesburg, South Africa, believes the best way to attack the problem is to buy out the gold mining companies of the world and regulate the output of the metal. He believes this plan might appear practical to business men, whereas the plan to make frequent changes in the weight of the gold dollar in order to stabilize prices would not be approved by the general public. People have become so used to a fixed weight for the dollar, that it would be difficult to educate them as to the benefits which would result from such a policy. Professor Lehfeldt writes:[1]

> Gold is a commodity produced in a few well-defined areas of the world; it would not be at all difficult to form a combination to control the whole output. Successful attempts on the part of private syndicates to control the output of other minerals are known, and of these the diamond syndicate deserves special attention. Some nine-tenths of the diamond output of the world is derived from a few mines in South Africa. These are controlled by a financial group, which indicates whether they are to be

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[1] R. A. Lehfeldt, *Restoring the World's Currencies*, 1923, pp. 56–57.

> worked and to what extent; the same group also holds a stock of diamonds for the market, and though making no attempt to control the minor sources of supply, such as the river diggings, exercises such a monopolistic control of the purchase of raw stones that all but an insignificant fraction of the supply passes through its hands. The object of the syndicate is to keep the price of diamonds high and steady, and this has been accomplished most successfully, although the diamond is an article for which demand fluctuates greatly according to the degree of prosperity in the world. All this has been accomplished by a syndicate of private capitalists for their own profit.
>
> Could not as much be done by a syndicate of nations for the good of the world? The syndicate would not even have to be a large one, for the British Empire and the United States supply more than four-fifths of the world's production of gold, and if they combined to regulate supply, even though the other producers stood out, the syndicate would be little more troubled than the diamond syndicate is by the river diggings.
>
> We put it this way to show how easy the syndication would be; but of course it would be far better to include all producers—Mexico and Russia are the next most important; and still better would be a truly international organization, for all countries are concerned in international commerce, and if the gold standard is to be adopted they should all take their share of the work of regulating it. To carry out such a policy of control, a Commission, appointed by the powers interested, would be needed.

In formulating a plan of this kind, it is not necessary to work out all the details in advance. The chief arguments in its favor are that the British Empire and the United States control most of the present gold fields and that the market value of the South African gold mining companies is now less than 400 million dollars. The bankers of New York and London could finance the purchase of the gold mines; the Federal Reserve Board and the Bank of England could cooperate to prevent money market crises and to control the shipments of gold to different parts of the world. In case the international commission suggested by Professor Lehfeldt were organized, its duties would be to anticipate the long-swing tendencies of prices, and correct them in the early stages. The short swings of the business cycle would be ignored. But as soon as an upward, long-swing trend of prices appeared in progress, some of the least productive gold mines could be closed and the commission could prevent the development of new mines. If prices declined, new mines could be opened. On this point Professor Lehfeldt writes:

> It would be somewhat difficult to arrange for new lands ready for development, but there is no impossibility in doing so. The Commission, or perhaps the government of the country, would buy grounds on which the existence of workable ore had been proved. Of all the undeveloped fields at present known, the most valuable is the far eastern portion of the Witwatersrand, and as this belongs to the South African government, the problem of dealing with it is simplified.

It would be desirable to purchase undeveloped fields for two reasons. It would be necessary to prevent flush production when the supply of gold is already excessive; but gold mines, like oil wells, give out after a time, and it would be necessary to open up new gold mines rapidly in case prices began a long downward decline. To prevent a decline in prices the commission would have to engage in the exploration of new ore deposits and research into improved mining methods; it would also raise capital to work the new ore deposits and old mines previously closed down because of poor results. It would seem that a long decline of prices during the next ten or twenty years could be prevented if the existing gold mines and undeveloped areas in the British Empire and the United States were purchased and operated with the purpose of stabilizing prices. The prospective supply of gold from these sources would seem entirely adequate for the purpose.

Moreover, the use of gold could be greatly economized if the Federal Reserve Board, the Bank of England and other central reserve banks were to cooperate in the settlement of international trade balances. They could avoid some unnecessary transportation of gold from one place to another, thereby preventing periods of money market strain.

## The Genoa Conference

This subject of international cooperation to stabilize gold reserves and currency circulation was discussed at the International Conference held at Genoa in April, 1922. Some of the recommendations of the Committee on this subject were as follows:

1. Any country not possessing a central reserve bank should establish one.

2. A plan should then be adopted to avoid competitive efforts to obtain gold, such as occurred in 1914 when the Bank of England mobilized gold after the outbreak of the War; at that time the withdrawal of gold from New York caused a banking crisis and forced the New York Stock Exchange to shut down.
3. An international clearing system should be established to facilitate the settlement of trade balances, just as the federal reserve banks in the United States facilitate remittances between different sections.
4. Specifically, credit should be regulated through the central reserve banks with a view to preventing undue fluctuation in the purchasing power of gold.
5. When progress permits, the central reserve banks should organize a futures market in foreign exchange.

By international cooperation, the supply of gold could be "managed" and the volume of paper money in circulation could be "managed" so as to stabilize prices and wages. In 1924 English writers proposed that the British currency should be "managed" without returning to the pre-war system of restricting credit with relation to gold reserves.[2] At that time, however, easy money conditions in New York favored the restoration of the pound sterling to gold parity in the foreign exchange market, and the British government, after arranging a credit of $100,000,000 with J. P. Morgan & Co. and $200,000,000 with the New York Federal Reserve Bank, restored the gold standard in foreign dealings in April, 1925.

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[2] See *Monetary Reform,* by John M. Keynes.

## Professor Fisher's Plan to Make the Dollar a Good Standard of Value

Professor Irving Fisher affirms that the general level of the cost of living can be stabilized and the dollar made a good standard of value if the people are willing to have the weight of the dollar changed every two or three months. Does the public desire that the cost of living remain steady? Most assuredly. But are people willing to have Congress pass a law providing that the weight of the dollar shall be changed every few months in order to stabilize the cost of living?

In answering this question, there are three things to consider: First, the majority of people do not understand economic principles well enough to see that a frequent change in the weight of the dollar is desirable; second, among those who do understand economic principles, there is the knowledge that wars have been responsible for many of the extreme price fluctuations of the past 200 years, and there is the feeling that it is hopeless to attempt to stabilize prices because of possible wars in the future; third, some of those who do not consider possible future wars as an objection do not have any faith in governments in the matter of regulating the supply of money.

The war objection need not be considered. The benefits of stabilized prices during peace would justify the adoption of Professor Fisher's plan even though it might have to be suspended during times of war. The objection that governments cannot be trusted is a serious one. Russia, Germany and France in recent years have printed paper money in utter disregard of the public welfare. Reckless issues of paper money have been witnessed in the United States at different times.

During recent years, however, members of Congress and business men have displayed such a rapid growth in economic intelligence that there are good hopes that sound monetary policies will prevail in the future. If this may be assumed, Professor Fisher's plan may be considered as a practical legislative proposal.

Professor Fisher's plan to stabilize prices by changing the weight of the gold dollar is as follows:

The present gold dollar weighs 23.22 grains. An increase in the weight to 24 grains would cause a slight decline in prices. A decrease in the weight to 22 grains would cause an increase in prices.

If prices tend to increase, the general price level can be brought back to the starting point by increasing the weight of the dollar. If prices decline, the general level can be brought back to the starting point by decreasing the weight of the gold dollar.

Just how frequently the weight should be increased or decreased is a detail which Congress would have to decide upon. For illustration, however, let us suppose the weight of the dollar to be changed every three months in case the level of commodity prices showed a change of 3 per cent or more during that interval. If prices increased 3 per cent in three months, then, to check the inflation, the weight of the dollar would be increased 1, 2 or 3 per cent tentatively, at the end of the period. The general level of prices on January 1, 1928, might be taken as a starting point. If there were no change in prices on April 1, the weight of the dollar would remain unchanged. If prices then decreased 2 per cent by July 1, the weight of the dollar would be decreased in proportion on that date. Then, if the price level advanced 3 per cent by October 1, the weight of the dollar would be increased 1, 2 or 3 per cent, on that date. By employing this method, the general price level could never get very far away from 100 per cent, the starting point. The Department of Commerce or the Bureau of Standards would calculate the index of prices; the Director of the Mint would change the weight of the gold dollar with reference to the index of prices.

Would this plan really stabilize the general level of prices and make the gold dollar a good standard of value? Professor Fisher raises this question and answers it as follows:[3]

> How can we know that if the index number is 1 per cent above par, a 1 per cent increase in the weight of the gold dollar will be *just* sufficient to drive the index number back to par? The answer is we *do not* know, any more than we know, when the steering wheel of an automobile is turned, that it will prove to have been turned

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[3] Irving Fisher, *Stabilizing the Dollar*, 1920, pp. 97–99.

just enough and not too much. Many things may interfere in the period elapsing between adjustments. But if the correction is not enough or if it is too much, the index number, when next computed, will tell the story. Absolutely perfect correction is impossible but any imperfection will continue to reappear and cannot escape ultimate correction.

Suppose, for instance, that next month, or adjustment period, the index number is found to remain unchanged at 101 per cent, that is, that the basketful of goods still costs $1.01. Then the dollar is at once loaded an additional 1 per cent. And if, next month, the index number is, let us say, 100½, i.e., ½ of 1 per cent above par, that ½ of 1 per cent will call for a third addition to the dollar's weight—this time ½ of 1 per cent. . . .

Or, reversely, suppose that the index number falls below par, say, 1 per cent below—the basket costing $0.99. This fact will indicate that the purchasing power of the dollar has gone up. Accordingly, the gold dollar will be reduced in weight 1 per cent and, at each adjustment period during which the index number remains below par, the now too heavy dollar will be unloaded and its purchasing power brought back to par.

The result is that the price level would oscillate only slightly. Instead of great price convulsions, such as we find throughout history, the index number would run close to par, say, 101, 100½, 101, 100, 102, 101½, 100, 98, 99, 99, 99½, 100, etc., seldom getting off the line more than 1 or 2 per cent.

The adjustment, like all human adjustments, takes place "by trial and error". There is always a slight deviation, but this is always in process of being corrected. The steering wheel keeps the monetary automobile not exactly in the straight line marked out, but always near it on one side or the other, so that its deviations will always afford the criterion needed for steering it back.

The trade of the United States is growing so rapidly that Professor Fisher's plan might work even if other countries did not adopt it. For instance, the business of the United States is nearly five times that of Great Britain. It is equal to that of France, Germany, Italy and Great Britain combined. The total bank credit of the United States is greater than that of the four countries mentioned above. If prices were stabilized in the United States, there would be a stabilizing effect upon Europe. Moreover, a stabilized demand for silk, rubber, hides, wool and sugar in the United States would tend to prevent trade fluctuations in Japan, South America, Cuba and certain areas in Asia. The United States imports 70 per cent of all the rubber produced abroad and 85 per cent of all the silk produced in Japan. It imports large amounts of wool and hides. It buys 70 per cent of the Cuban sugar crop. This point can be brought out more clearly, if we reverse the argument. Suppose there is an increase of 50 per cent in the index of prices for the United States. The increases in cotton, wheat, copper, wool, sugar, silk and rubber would vitally affect Europe, Cuba, Japan and the rubber plantations of the Orient. But if prices are stabilized in the United States, unsettlement in the economic conditions of foreign countries will be measurably prevented. Countries influenced by one commodity—tin, tea, rubber, sugar or silk—will continue to experience ups and downs, but even in such countries, conditions will be improved.

## Can the Federal Reserve Banks Control Commodity Prices?

After the panic of 1920 the federal reserve banks were frequently blamed for the decline in commodity prices. Occasionally it was affirmed that the federal reserve banks could have maintained commodity prices at the levels of 1920 if they had so desired. Mr. James A. Strong, Congressman from Kansas, on February 20, 1926, introduced a bill containing a clause instructing the federal reserve banks to use all of their powers "for promoting stability in the price level."

Mr. Ogden L. Mills, Under-Secretary of the Treasury, in discussing this bill on May 28, 1927, had the following to say regarding the control of prices by the federal reserve banks:

> You can well imagine what will happen to the Federal Reserve System if once the idea is accepted that the federal reserve banks possess a lever that enables them to move prices up or down. Fortunately no such power exists. It should not exist.
>
> You will remember that when post-war deflation came, diligent efforts were made to find a scapegoat. The federal reserve banks were bitterly attacked because their action with reference to the discount rate was said to have unnecessarily accelerated the movement of deflation. Agriculture was probably the principal sufferer in the deflation period and the argument was directed particularly to agricultural districts.
>
> This much perhaps is true: holding the reserves of many banks and the reserve of the country, being the source of additional credit for business purposes and the

> means of retiring that credit when no longer needed, the Federal Reserve System, by its change of discount rates and by accompanying purchases and sales of securities, can, under certain conditions and to some extent, control the volume of credit and the cost of credit; but it must again be noted that it has little or no control over the direction which that credit will take, and that the direction which credit will take lies wholly within the control of the individual private banks.[4]

The total volume of loans and investments has fluctuated very little during the past five years; but commodity prices have not remained steady. Bearing on this point, Mr. Mills states:

> It is not amiss to point out that in the last two years (1925–1927) the holdings of securities by the Federal Reserve System have been stable and consistent, but in that time bank credits have steadily increased and general commodity price levels have dropped about 10 per cent.

In behalf of Congressman Strong, it may be said that he has definitely stated that the federal reserve banks cannot prevent fluctuations in the prices of cotton, wheat and corn; he has also stated that the Federal Reserve System cannot maintain the average of all commodities at anything like a fixed level. What he desires is that the federal reserve banks shall be instructed to promote as much stability as possible in the level of prices.

In Wall Street some bankers claim that the federal reserve banks are already doing what they can to stabilize prosperity; the Strong Bill, they argue, is superfluous. As against this Wall Street point of view, however, the recent hearings on the Strong Bill conducted by the House Committee on Banking and Currency have brought out the fact that *the members of the Federal Reserve Board have not yet agreed upon a code of policies for governing the federal reserve banks.* Lacking instructions from Congress, it is still possible for the Secretary of the Treasury to dictate the policy of the federal reserve banks unwisely, as was the case in 1919. At that time, the members of the Board who were opposed to unsound policies remained silent because there was no clause in the Federal Reserve Act to which they could appeal for support in advocating a correct policy. In 1919 it would have saved the public from a large part of the inflation which developed, and in 1920 huge losses would have been largely prevented, if the Strong Bill had been on the statute books and had been observed by the federal reserve banks.

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[4] New York *Times,* May 28, 1927, p. 25.

At the moment, however, it does not seem that the Strong Bill will be approved by Congress. Many bankers are against it. They are afraid the public will misunderstand the bill and make the mistake of believing that the federal reserve banks can prevent depression in the prices of cotton, wheat, corn, etc. But even if the bill does not pass, Congressman Strong has rendered a public service by introducing it. In a democracy it is desirable that the public shall understand the subject of money and credit.

The chief trouble in Europe is that the rank and file of politicians have no intellectual convictions on what constitutes sound monetary policy. Among the countries recently at war, Great Britain is the only one which had such convictions and followed them.

## Federal Reserve Policy

In dealing with the problem of stabilizing production and employment, the Federal Reserve Board has not entirely perfected its policies. Its members are still groping their way in the sense that they are not sufficiently agreed upon policies to feel justified in publishing reasons for their decisions with regard to changes in the discount rate and purchases of securities. Some of the published statements on this subject, however, are interesting.

Does the Federal Reserve Board watch the "reserve ratio" as a guide in changing the rediscount rate? This was the policy of the Bank of England before the War, but it is not a governing factor with the Federal Reserve Board. Ordinarily, it pays little attention to the reserve ratio. The Federal Reserve Act does not give specific instructions regarding policy except the statement that the rates of discount "shall be fixed with a view of accommodating commerce and business."

Some of the detailed points regarding federal reserve policy, given in the answers to the following (our) questions, are taken from the annual reports of the Federal Reserve Board and testimony before the House Banking and Currency Committee during the hearings on the Strong Bill.

1. In fixing discount rates is the Federal Reserve Board governed by the requirements of keeping a reserve of 40 per cent against notes outstanding and 35 per cent against deposits?

> "So long as the gold reserve of the federal reserve banks nears the 40 per cent legal limit, as was the situation in 1919 and 1920, the Federal Reserve Board is compelled to adopt a policy which will bring deflation. Otherwise, they are unhampered as to whether they will adopt a policy of bringing either deflation or inflation." (Testimony of Dr. J. R. Commons before committee on the Strong Bill.)

2. What items are watched by the Federal Reserve Board in determining upon a change in rediscount rates?

> Some of the guides are statistical indexes on employment, pay rolls, production and department store sales. (Testimony of Dr. A. C. Miller, member of the Board, before committee on Strong Bill.)

3. Does the Federal Reserve Board follow open money market rates in fixing the official discount rates?

> Ostensibly, the Board does follow the market. Actually, however, "the Federal Reserve System first prepares the market through its operations and then creates the rate. It first prepares the market and then follows it." (Dr. Commons.)

4. Does the Federal Reserve System rely only upon changes in the discount rate in regulating credit and, if not, what other means are employed?

> "The system does not rely upon changes in discount rates as the only means of influencing the general credit situation. The open market transactions of the federal reserve banks, as well as their discount policies, have reflected federal reserve credit policy." (10th Annual Report.)
>
> "Other factors which can be used to control the demand for credit are publicity of conditions, private advice by member banks to customers, and the working rule that member banks do not borrow from the federal reserve banks in excess of their credit reserve." (Dr. Commons.)

5. What effect upon borrowers does the Federal Reserve System seek to produce by an increase in discount rates?

> "The rise in discount rates is not intended to interrupt or interfere with commitments that are in process of completion, but rather to induce a more prudent attitude on the part of borrowers with regard to new commitments." (10th Annual Report.)

6. Does the Federal Reserve System attempt to aid or restrict speculation?

> "The Federal Reserve System is a system of productive credit. It is not a system of credit for either investment or speculative purposes. It seems clear that if business is undergoing a rapid expansion and is in danger of developing an unhealthy or speculative boom, it should not be assisted by too easy credit conditions." (10th Annual Report.)

7. Does the Federal Reserve System have complete control over lending by member banks at all times?

It is obvious that until the member banks come to the federal reserve banks for loans, the member banks are free in their making of loans. "When, however, the member banks have expanded their operations to the full extent for which the gold deposit has furnished the required reserve or has withdrawn currency in a volume equal to this deposit, a further use of the additional lending power arising out of the gold can be made only by borrowing from the federal reserve bank." (10th Annual Report.)

8. What limits the volume of credit issued by the federal reserve banks?

"The solution of the economic problem of keeping the volume of credit issuing from the federal reserve banks from becoming either excessive or deficient is found in maintaining it in due relation to the requirements of agriculture, industry and trade and the prevention of the uses of federal reserve credit for purposes not warranted by the terms or spirit of the Federal Reserve Act." (10th Annual Report.)

Reserve banks do not lend against railroad bonds or speculative securities.

9. Would it be satisfactory for the Federal Reserve Board to be guided in credit policies by commodity prices?

"Entirely apart from the difficult administrative problems that would arise in connection with the adoption of the price index as a guide, and entirely apart from the serious political difficulties which would attend a system of credit administration based on prices, there is no reason for believing that the results obtained would be as satisfactory as can be reached by other means economically valid and administratively practicable." (10th Annual Report.)

10. Are statements available giving the reasons for changes in rediscount rates recommended to the federal reserve banks by the Federal Reserve Board?

"I could not undertake to give any clear definition of just what considerations move my colleagues from time to time. It is not the habit of the Federal Reserve Board to preserve for its records, save occasionally, a statement of the grounds upon which important action is taken." (Dr. A. C. Miller, member of the Board, in testimony during Strong Bill hearings.)

# CHAPTER XVI

## BUSINESS CONDITIONS, 1895–1914

A great increase in gold production tends to produce speculation, millionaires and wars. It was so between 1850 and 1873, following the discovery of gold in California and Australia. The inflation of values in that period at first saved the American farmer and restored the fortunes of bondholders, and then gave Wall Street a notable crop of successful speculators, including Cornelius Vanderbilt, Daniel Drew and Jay Gould. But when farmers and capitalists are prosperous, and governments have overflowing treasuries, it is usually the case that nations will engage in war, if there is something of economic value to fight about which promises to yield a profit to the victor. During the twenty years following the discovery of gold in California and Australia, the steady rise in prices led to a number of wars in Europe, and the Civil War in America.

A similar series of events followed the great increase in gold production in South Africa and Alaska after 1895. The distress of the American farmer disappeared; bankrupt railroads were promptly rehabilitated; depressed manufacturers became affluent trust magnates. Carnegie, Frick, Hill, Harriman, Reid, Rockefeller and Duke arrived. Depression had entailed suffering, sympathy and peace. Inflation produced profits, covetousness and wars—the Spanish-American, the Boer and the Russo-Japanese wars, and then the Moroccan imbroglio, the Balkan conflicts and the World War.

The world's production of gold increased from $1,060,000,000 during the decade 1881–1890 to $2,100,000,000 in the decade 1891–1900 and nearly $4,000,000,000 in the next decade. The annual rate rose from $100,000,000 to $450,000,000. But for the panic of 1893, and the activities of Mr. Bryan and his associates in Congress regarding free-silver during the three years after that panic, the world would have enjoyed the benefits of this increased gold production a few years earlier. As it was, the rise in world prices did not begin until after the American elections of 1896.

From 1897 to 1900 the general level of commodity prices rose 50 per cent. The value of the wheat crop of the United States rose from an average of $250,000,000 during 1893–1895 to $450,000,000 during 1900–1902. Meanwhile, the value of the corn crop rose from $600,000,000 to $950,000,000, and the cotton crop from $220,000,000 to $400,000,000. These increases provided for mortgages and taxes, and also a handsome surplus for improvement of the country's agricultural equipment. An average of twenty railroad stocks rose from 52 in 1896 to 79 in 1900 and 118 in 1902. In two years after 1897 the price of iron rose from $10 to $18; and an average of steel prices, from $31 to $53.

In this new era of prosperity, however, America lagged behind. Continental Europe, not having been intimately affected by the "free-silver" scare in the United States, enjoyed a boom while readjustment was still in progress in America. And in Continental Europe, Germany took the lead.

## The German Boom

During the decade 1896–1906 industrial Germany reached a "place in the sun". Germany's foreign trade increased 60 per cent as compared with only 38 per cent for Great Britain.[1] There was an increase of 17 per cent in population and 60 per cent in the national income.[2] Rural hamlets became centers of feverishly expanding industrial activity, the concentration of population being especially noteworthy in Dortmund, Essen, Düsseldorf, Chemnitz and other cities in the Rhine region. The iron production of Germany, which in 1870 amounted to only 23 per cent of the British output, overtook the latter in 1900.

The physical factors which permitted this rapid industrial expansion were the coal mines of the Ruhr Valley, the iron mines in Lorraine, and the great increase in population and its concentration in the industrial centers. These underlying factors were

[1] Riesser, *The German Great Banks*, p. 102.
[2] *Ibid.*, p. 93.

bound to produce rapid economic growth sooner or later. The factors which caused this industrial expansion to take the form of a boom from 1897 to 1900, however, were the abundance of funds in European money markets after the American panic of 1893 and the abnormal increase in world gold production.

## Speculation in German Industrials

In 1894 the open market discount rates in Berlin averaged below 2 per cent. Funds continued abundant through 1895, 1896 and 1897. This stimulated the bankers to engage in financial promotion. By 1898 German investors were speculating confidently in coal, iron and electrical shares; in 1899 the boom reached the point where overtrading caused a tightening in the money market. In December, 1899, open market discount rates were between 6 and 7 per cent and stock exchange money for "prolongation purposes" reached 9½ per cent.

The German money pinch of December, 1899, reacted upon the London money market and caused a decline on the stock exchanges of both London and New York. The flurry in London and New York was soon over; fundamentals there were sound. But in Germany a genuine banking crisis continued during the first half of 1900. There was a panic and depression in continental Europe in 1900 which found no parallel in America. The German cycle which culminated in the crisis of 1900 is clearly defined in the following table of joint-stock company flotations from 1894 to 1902:

German Joint-Stock Flotations, 1894–1902 *

| Year | Number of Companies | Joint-Stock Capital (Marks) |
|---|---|---|
| 1894 (Easy money) ....... | 92 | 88,000,000 |
| 1895 " " ....... | 161 | 251,000,000 |
| 1896 " " ....... | 182 | 268,000,000 |
| 1897 " " ....... | 254 | 380,000,000 |
| 1898 " " ....... | 329 | 463,000,000 |
| 1899 (Speculation) ........ | 364 | 544,000,000 |
| 1900 (Money crisis) ....... | 261 | 158,000,000 |
| 1901 (Depression) ....... | 158 | 340,000,000 |
| 1902 (Easy money) ....... | 87 | 118,000,000 |

* Riesser, p. 119.

Financial promotion was especially notable in the electrical companies. By 1900 the capital of electrical companies listed on stock exchanges in Germany amounted to 436,000,000 marks as compared with only 195,000,000 marks in 1896. Some of these electrical companies became powerful financing organizations as well as manufacturing and exporting companies. During the stock market boom there was also heavy buying and consolidation of coal companies. The Harpen Company, the largest in Germany next to the Gelsenkirchen Mining Company, desired the Centrum Works. The latter company had 1,000 shares, or Kuxe, which had risen in price from 6,850 marks in 1893 to 28,500 in 1898. The price paid by the Harpen Company was 30,000 marks, or four and one-half times the price prevailing in 1893.

## German Stock Market Panic, 1900

The money crisis from December, 1899, to July, 1900, put a stop to financial promotion. The funds of the banks were so exhausted that weak investors whose shares had been bought largely on bank credit were forced to sell out their holdings at a loss. This forced liquidation caused a drastic slump in prices between April and July. From April 14 to July 4, the stock of the Harpen Coal Company dropped from 244 to 177. Among the iron companies the shares of the Dortmund Union dropped from 140 to 86; Westphalian Steel Works, from 260 to 182; Düsseldorf Iron Works, from 270 to 179; and other shares in similar proportion, most of them declining 25 to 35 per cent during a period of two and one-half months. A year later, as trade depression became severe, there were even worse declines in the stock market. The shares of the Arenberg Company dropped from 1400 to 465 during the summer of 1901. The shares of the Rhine Steel Works dropped from 244 to 122 and the stock of the General Electric Company (of Germany) from 262 to 170. The new flotations of industrial shares in 1901 fell off 80 per cent from the peak figure of 1899; issues of bank stocks were negligible.

The trade depression of 1901 in Germany, like most panics in America, brought to light a great deal of reckless financing and some that was tainted with fraud. One report said:

> There are now more financiers and directors of companies in German prisons awaiting trial for dishonest practices than perhaps any other country has shown at one time in history.[3]

The chairman of a Berlin bank who was a director in twenty-six corporations was forced to resign under financial stress. In Breslau, the head of the United Shipping Company committed suicide when it was discovered that he had raised four million marks on forged bills of lading.

## German Industrial Growth

The record of commercial and ethical casualties in 1901 was a logical aftermath of the speculative excesses of 1899. But normal growth did not stop. Industrial Germany continued to expand. By 1905 German steel production was nearly double the British output. Between 1900 and 1905 German steel production gained 50 per cent while the British output rose only 15 per cent. The following table shows this phenomenal trend.

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[3] London *Economist*, Aug. 8, 1901.

Steel Production

| Year | Germany (Tons) | Great Britain (Tons) | Ratio, German to British (Per Cent) |
|---|---|---|---|
| 1890 ........ | 1,613,000 | 3,637,000 | 44.4 |
| 1900 ........ | 6,645,000 | 5,130,000 | 129.6 |
| 1905 ........ | 10,066,000 | 5,983,000 | 178.0 |
| 1910 ........ | 13,698,000 | 6,106,000 | 224.0 |
| 1913 ........ | 18,949,000 | 7,786,000 | 243.5 |

During the expansion of the decade 1895–1905, the German steel industry reached what might be called the domestic saturation point. The steel merchants pressed forward to overseas markets. But political control largely determines the demand for steel. In America a protective tariff shut out German and British steel alike. In Canada and India political control favored Britain against Germany. Even in Argentina the ownership of most of the railways by British investors caused orders for steel rails and railway equipment to be placed in Britain rather than Germany.

Where would German steel and electrical machinery find a market abroad? This question caused a new outlook on life in Germany. Before the Franco-Prussian War, Germany was famous for its universities and philosophers; France, by reputation, was the leading military power; England dominated foreign trade. Britannia ruled the waves, France the land, and Germany the "air". After 1871 Germany became the leading military power; after 1900 she became ambitious to outrank Britain in foreign trade and naval power. The lectures in the historical department of the University of Berlin on Germany's destiny as a World Power began to command more attention than the philosophy of Immanuel Kant. The Kaiser and the bureaucrats of Berlin became the political attachés of industrial corporations in the Rhine Valley and the shipping companies of Bremen and Hamburg.

The industrialists began to invest in new railways and public utilities in foreign lands, especially Asia Minor, to create a demand for their steel and machinery. Exports and foreign investments needed political protection. In behalf of the industrialists, accordingly, German diplomats laid plans for political and financial penetration of Turkey and Morocco and the Reichstag considered appropriations for a navy. Austria and Germany cooperated to gain control of the overland route to Constantinople and Saloniki, a route blocked directly by Serbia, backed up by Russia, while control of Saloniki would run counter to the ambitions of Greece, operating under the guidance of Great Britain.

In 1904, while Russia was engaged in her war with Japan, Austria seized Bosnia and Herzegovina, thus cutting down a part of the hostile area between Berlin and Constantinople. Serbia, however, was not acquired and the road to the Near East remained blocked. In the same year, also, the German designs on Morocco were frustrated by a sudden deal between France and England.

## German Defeat at Algeciras

The Moroccan dispute of 1905 did not command much attention in the United States, albeit America was represented at the Treaty of Algeciras, where the matter was settled in 1906. At that time American business men were more interested in the corn and cotton markets, Wall Street speculation and President Roosevelt's efforts in arranging peace between Russia and Japan. But this Moroccan dispute deserved the keenest attention. It was a harbinger of the World War and had a logical relation to war debts, currency inflation and the multitude of economic abnormalities which were to vex the world more than a decade later. The course of events was as follows: German iron and steel production increased; Germany sought foreign markets and foreign colonies; France and England challenged Germany's effort at commercial and colonial expansion; Germany persisted; war resulted. Algeciras was the legal birthplace of the Anglo-French "common cause".

The events leading up to the Treaty arranged at this Spanish seaport in 1906 are well summarized by *The New International Encyclopedia* as follows:

> A part of the understanding reached between England and France in 1904 provided that France should have a free hand in Morocco, while England was given a free hand in Egypt. Germany, which had abandoned Bismarck's policy of opposition to colonial expansion, was

> looking about for such stray portions of undeveloped land as had not been appropriated by England and France. Germany had to choose between two courses. Either she could frankly recognize the inevitable consequences of her geographical position and her late entrance into the field as a colonial power, which handicapped her development as a world state, or she might determine to challenge the more fortunately situated and longer established World Powers and create for herself a larger "place in the sun". She chose the latter alternative. . . .
>
> Colonies where Germans might be kept under German control were felt to be the great need. Germany, therefore, determined not to stand quietly by and allow further colonial acquisitions by the other great European Powers without making an effort to share in the spoils.
>
> The Russo-Japanese War (1904–1905) had revealed the military weakness and inefficiency of Russia. This situation made Russia's support of France much less valuable and Germany felt that it was an opportune time to assert her position in regard to Morocco. On March 21, 1905, the German Emperor, while on a voyage to Constantinople, disembarked at Tangier and encouraged the Sultan to reject the scheme of reforms proposed by France. He, moreover, succeeded in forcing France to submit the whole Moroccan situation to a conference of the Powers held at Algeciras in January, 1906. England firmly supported France and let it be known that any interference with France's predominant position in Morocco would be resisted by her. Italy, moreover, refused to support her ally (Germany), with the result that France scored a distinct diplomatic victory.

Coming events cast their shadows before them. The refusal of Italy to support Germany at Algeciras in 1906 foreshadowed her refusal to take arms on the side of Germany in 1914. The action of the

United States Senate when ratifying the treaty of Algeciras in December, 1906, foreshadowed America's refusal to pool her interests with the Allies in 1917 and her rejection of the Treaty of Versailles in 1919. The Senate stated that America's signature to the treaty was intended to protect American interests in Morocco but "without purpose to depart from the traditional American foreign policy which forbids participation by the United States in the settlement of political questions which are entirely European in their scope". It was stipulated that America in signing assumed no obligation to enforce the agreement.

### America During the German Boom and the Boer War

The American people were delighted with themselves for having disposed of the "free silver" question at the elections of November, 1896. The announcement of the election returns, showing that the gold standard and William McKinley had won, was greeted with an epidemic of bonfires and other forms of joyful celebration. It was taken for granted that the country would enjoy prosperity. Nobody seemed to worry as to whether there would be gold enough to maintain the gold standard. It was known that the threat of "free-silver" had caused hard times, and had driven European capital out of the country, and it was believed, therefore, that the gold standard would bring good times and probably encourage a good deal of European capital to come to the United States.

These hopes were not disappointed. During the two years following the elections, $200,000,000 of gold came into the United States. Bankers were more confident in making loans, and economic progress was soon in evidence. But even the most optimistic predictions of the election campaign managers fell short of the prosperity actually realized.

## American Loans to Europe

The business boom in Europe during McKinley's first term caused a heavy demand for American merchandise. Then in 1899 England began the Boer War, which cost several hundred million dollars per year. This war not only called for an increase in the demand for merchandise in Europe, but also tended to divert British capital from the usual channels of foreign investment.

Foreign borrowers came to New York. In July, 1899, J. P. Morgan undertook the conversion of the Mexican national debt. About 25 million dollars out of a total of 110 million dollars was sold to American investors.

Then the British government borrowed in New York. It was the first time a European state had formal recourse to the New York money market. The amounts were small—just enough to stabilize the foreign exchanges while Britain was buying war supplies in America. In March, 1900, the sum of $12,000,000 was subscribed for bonds issued in London. J. P. Morgan acted as agent for subscriptions. In August, however, an issue was offered directly to the public in America. On August 7, when the books closed, over $55,000,000 was subscribed, of which $28,000,000 was accepted. In 1900 New York financial institutions handled 40 million dollars of British government securities, 20 million dollars of German treasury notes, 10 million dollars of Swedish government bonds, and 25 million dollars of the bonds of a railway in southeastern Russia. In addition, many small foreign issues were sold to American investors. The newspapers also reported the return of large amounts of American securities from Europe.[4]

For a year or more the United States acted the rôle of a creditor nation. Large amounts of American securities were still held in England and Holland, but during 1899–1900 America was lending more abroad than she was borrowing. The conditions during these two years were somewhat like the years 1915 1916, when Europe bought war supplies and covered the trade balance with securities and gold.

## The Foreign Credit Balance

During the four years 1898–1901 inclusive, the merchandise exports of the United States approximated

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[4] *Financial Chronicle*, January 5, 1901.

$5,400,000,000, as compared with $3,150,000,000 of imports, leaving a huge trade balance of nearly $2,250,000,000. Nearly half of that amount was required to meet the expenses of American tourists abroad and to pay interest on American railway bonds in England. But the trade balance was so large that Europe sent nearly $200,000,000 of gold and a similar amount of securities to the United States to pay for the excess of merchandise exports. The remarkable foreign trade situation can be shown by a percentage calculation, taking the year 1895 as 100 per cent. The following table shows that in 1901 there was an increase of 77 per cent in exports, as compared with an increase of only 10 per cent in merchandise imports.

Indexes, United States Foreign Trade (1895=100 per cent)*

| Year | Exports Per Cent | Imports Per Cent |
|---|---|---|
| 1895 | 100 | 100 |
| 1896 | 122 | 85 |
| 1897 | 133 | 93 |
| 1898 | 152 | 79 |
| 1899 | 155 | 100 |
| 1900 | 179 | 103 |
| 1901 | 177 | 110 |

*Imports may have been undervalued, but hardly enough to explain the lag behind exports.

## The Speculative Mania

The optimism caused by the influx of gold into the United States and by the huge market for American products in Europe is reflected in the activities of the New York banks. The loans and investments of the National Bank of Commerce in New York increased from 21 million dollars in 1896 to 71 million in 1901; those of the National City Bank rose from 23 million to 113 million; the Chase National Bank from 13 million to 42 million; and the First National Bank from 20 million to 74 million dollars. These four banks expanded 300 per cent in five years. Inflation was in evidence all over the country. The total loans and investments of all national banks rose from $2,400,000,000 in 1896 to $4,000,000,000 in 1901, a gain of 66 per cent in five years. Meanwhile, the gold and silver reserves of these banks increased from $210,000,000 to $370,000,000, a gain of over 75 per cent, so that the ratio of gold to bank credit was well maintained. This "gold inflation" was a sustaining influence. There was no empty bubble.

The owners of farms, factories and railroads were made rich by this great increase in credit expansion. The sheriff was no longer a nightmare to the farmer and receivers were rapidly dismissed from control of the railroads. Manufacturers who had been able to hold on through the hard times after 1893 were able to sell at a big profit. A mania for speculation developed, and Wall Street rose to the occasion by huge offerings of new securities.

The listings of stocks on the New York Stock Exchange rose from $528,000,000 in 1898 to $1,642,000,000 in 1901. The trading increased from

112,000,000 shares in 1898 to 266,000,000 in 1901, the latter figure exceeding all subsequent years until 1906.

The consolidation of many small properties into "trusts" excited the public imagination. Securities representing huge assets inspired greater confidence than those of small companies. Popular speculations were afforded by the formation, in 1899, of Amalgamated Copper with a capitalization of $175,000,000 and American Smelting with $201,000,000. The peak in magnitudes was reached in 1901 with the $503,000,000 capitalization of Consolidated Tobacco and the $1,370,000,000 of the United States Steel Corporation. The year 1901 also marked the culmination of a speculative mania. During the Northern Pacific Panic on May 9, 1901, the public learned how quickly manipulators abandon support of their favorite stocks when temporarily preoccupied with money matters. On that day, call money rose to 75 per cent. To relieve the stringency, a syndicate of bankers arranged a special loan of $20,000,000 and J. P. Morgan loaned $6,000,000 at 6 per cent. But meanwhile Steel Common dropped from 48 to 24; American Tobacco, from 120 to 99; Atchison, from 78 to 43; and United States Steel preferred, from 98 to 69.

The excitement passed within a few days. Fundamentals were sound and stocks recovered. But the speculative boom had culminated as far as the chastened public was concerned.

## Andrew Carnegie

Andrew Carnegie was one of the manufacturers who eventually became rich by holding on through panics and depressions. He was born in Dunfermline, Scotland, on November 25, 1835. In 1848 his father migrated to America and settled in Allegheny City, Pennsylvania. Andrew worked in a cotton mill for $1.20 a week. Later he obtained office work and studied bookkeeping. At fifteen he was a messenger boy at $2.50 a week. He studied telegraphy and became an operator on the Pennsylvania Railroad at $25 a month. His alertness in this position attracted the attention of Mr. T. A. Scott. In 1859 Carnegie became secretary to Mr. Scott, and when Scott became vice-president of the Pennsylvania Railroad, Carnegie was made superintendent of the western division of the line. While in that capacity Carnegie became influential in placing sleeping cars on the Pennsylvania Railroad, and was offered a one-eighth share in the sleeping car company. He accepted the offer, borrowing the money for the investment from a bank.

During the Civil War, Carnegie was used by the Secretary of War to manage military railroads and telegraphs for the Government. There was a boom in petroleum during the War which attracted Carnegie's attention. He purchased some oil lands, and made good profits from oil wells. But he was not an oil man. His knowledge of railroads led him more logically into the iron business. His career really began when he purchased a one-sixth interest in the Iron City Forge Company from Thomas N. Miller for $8,920. This was in May, 1864, when iron prices were at the peak. Then prices slumped and the iron business suffered. Carnegie bought out Miller.

His experience on the railroads made him alert to see that wooden railroad bridges would be superseded with iron ones. He formed the Keystone Bridge Works to build iron bridges and began to manufacture steel rails and other products.

During this period after the Civil War came an unusual opportunity when the Pennsylvania Railroad offered him a high position. Carnegie refused. He stuck to the iron and steel business. The great railroad boom from 1868 to 1873 made him a rich man. He continued to stick during the serious business depression which followed the panic of 1873.

When the next railroad boom began in 1880, Carnegie was one of the foremost men in the business. Profits were good during the railroad booms from 1880 to 1883 and 1886 to 1892. He held on during the lean years from 1893 to 1897. Then came the great increase in gold production and expansion in financial promotions. During the epidemic of consolidations and mergers between 1898 and 1902, Judge Gary, representing the Federal Steel Company, persuaded J. P. Morgan & Company to finance a consolidation which would eliminate the competition of the Carnegie mills. They paid Carnegie $492,000,000 in bonds and preferred stock of the United States Steel Corporation, formed in 1901 to merge the Carnegie, Federal and other companies.

## Rockefeller and the Standard Oil Company

John D. Rockefeller was born on July 8, 1839. He attended the common schools of Cleveland, Ohio, several years. In 1855 he obtained a position as clerk, accountant, and rent collector for the wholesale produce and real estate business of Hewitt and Tuttle. In 1858, with $800 he had saved and $1,000 he borrowed from his father, he entered a commission house partnership with E. B. Clark. In the first transaction Rockefeller borrowed $2,000 from a Cleveland bank on warehouse receipts. Saving money and establishing credit with banks were two of the main factors in Rockefeller's success.

When the Government began hurried purchases of commodities at the outbreak of the Civil War in 1861, the firm of Clark and Rockefeller made handsome profits. Then there came word of fortunes being made in the petroleum business. In 1862 the firm invested $4,000 in an oil refinery projected by Samuel Andrews. It was so profitable that Rockefeller sold his interest in the produce firm in 1865 and went into partnership with Andrews. Andrews was a technical man and superintended the manufacturing processes, while Rockefeller, who had acquired experience in trading with the commission business, took charge of the buying, selling and financing. In 1867 the partnership joined hands with William Rockefeller, S. Z. Harkness and H. M. Flagler, and formed the partnership of Rockefeller, Andrews and Flagler.

This partnership was the basis of the Standard Oil Company. In 1870 the firm incorporated under the name of the Standard Oil Company of Ohio, with capital stock of $1,000,000. This company had a capacity equal to only 10 per cent of the total oil refinery business in the United States, but even so it was the largest in the country. The oil industry was still in its infancy, and there were numerous small companies with meager financial resources. Many of them encountered difficulties after the panic of 1873. The price of Pennsylvania crude oil suddenly dropped from 9.38 cents a gallon in 1871 to 2.63 cents in 1874.

During the depression of 1874, the Standard Oil Company acquired four of the largest refineries in the Philadelphia, Pittsburgh and New York districts. In acquiring these other companies, shares of the Standard Oil Company were given in payment. By 1875 the stock of the Standard Oil Company of Ohio had been increased to $3,500,000. In 1879, at the end of the financial depression, the Standard Oil controlled over 90 per cent of the refining capacity of the country.

An important factor in the expansion of Standard Oil ownership of refineries was its control of transportation. The business of the Standard Oil Company of Ohio was so great that traffic managers of competing railroads, the Erie and New York Central, for instance, were glad to offer rebates in order to get the large amount of traffic offered. If the railroads had been regulated by a Commerce Commission at that time, they would have received a profitable rate for transporting oil. But as matters stood, the Standard Oil Company was able to take advantage of the cut-throat competition which existed among the railroads.[5] If the Interstate Commerce Commission and its control over railway rates had been established in 1870, the ownership of the oil industry might be distributed differently. But railroad practices which are now illegal were simply "good business" in 1870, and taking advantage of that fact, the Standard became supreme by 1879. In addition to getting favors from the railroads, it also acquired control of practically all of the pipe lines to New York, Philadelphia and Baltimore.

From this point on it was merely a question of waiting for the country to grow until the stock of the Standard Oil Company would increase tremendously in value. The net profits of the Standard Oil increased from $11,000,000 in 1883 to $19,000,000 in 1892. In 1903 they exceeded $81,000,000, thanks to the industrial boom and price inflation which followed the discovery of gold in South Africa and the establishment of the gold standard in the United States.[6]

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[5] Eliot Jones, *The Trust Problem in the United States,* p. 48.

### Edward H. Harriman

At the time when Carnegie and Rockefeller were getting their start in business, Harriman was a mere school boy. He was born in Hempstead, Long Island, in February, 1848, the son of Reverend Orlando Harriman, an Episcopalian rector. In 1862 he became an office boy for D. C. Hays, a member of the New York Stock Exchange, at $5 a week. After six years in this house, attending to the routine work of dealing with customers and other brokers, he was rewarded with the position of managing clerk in 1868. Meanwhile, he had acquired experience in analyzing the money market which was to prove valuable in later years. During the London panic of 1866 he learned that speculators in New York could lose money on account of financial stringency in Europe. He was a student of the financial markets as well as a brokerage clerk.

Having seen the profits made by brokerage houses during the bull market of 1868–1869, he decided to go into business for himself. In 1870 he borrowed $3,000 from his uncle, Oliver Harriman, a merchant, and bought a seat on the New York Stock Exchange. The large clientele of friends made during his eight years with D. C. Hays formed the basis of a profitable brokerage commission business.

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[6] *Ibid.*, p. 88.

In 1874 he attempted to get rich quick by speculation. A leading speculator, "Deacon" White, was attempting to corner certain anthracite stocks and Harriman, feeling that these stocks had advanced too much, sold short. His judgment was correct. The attempted corner failed, and the prices of the anthracite stocks declined enough to permit him to cover his short sales at a profit of $150,000. His next large operation was not so successful. He went short of Delaware and Hudson just when John Jacob Astor happened to want an interest in the company. The stock advanced smartly under Astor's buying and Harriman ran to cover, a heavy loser.

During the next three years, the stock market passed through a period of depression. The brokerage business was dull. Harriman tried his hand in Hudson River transportation, after the fashion of Daniel Drew and Commodore Vanderbilt thirty years previously. In 1877 he bought the *Twilight,* a steamer plying between New York and Newburgh, but business was poor and he disposed of the vessel after a short period of operation.

The determining factor in Harriman's future success seems to have been his marriage in 1879 with Miss Mary Averell, daughter of William Averell, president of the Ogdensburg and Lake Champlain Railroad. After his marriage he turned his attention to railroad transportation in the northern part of New York State.

A phenomenal bull market in railroad stocks was just beginning. Harriman purchased a small bankrupt railroad which connected with the Pennsylvania Lines at one point and New York Central at another. After improving the operating condition of the road, he offered it for sale to both the Pennsylvania and New York Central, emulating Jay Gould's deals in small railroads during the Civil War period. The Pennsylvania proved responsive, and paid Harriman a good price. In the meantime he became a director of the Ogdensburg Line, of which his father-in-law was President. Then he turned his attention to Florida where he bought property for railroads. This property was quickly sold, however, when Harriman was attracted to the Illinois Central. He bought stock in this company, and became a director of the road in 1883. When Stuyvesant Fish was elected president of the road in 1887, Harriman became vice-president and also Mr. Fish's most trusted adviser. He displayed conspicuous ability in acquiring control of other properties. A case in point was the Dubuque and Sioux City Railroad, which Harriman acquired for Illinois Central, scoring a coup over J. P. Morgan and Compay.[7] In 1892 Illinois Central gained control of Louisville and Nashville.

Thus far Harriman had been very unlike Rockefeller and Carnegie. Instead of buying properties and holding on through prosperity and depression, he had flitted from one thing to another. After the election of McKinley in 1896, however, Harriman changed his tactics. Seeing a new era of economic progress ahead, he concentrated on Union Pacific and identified himself with this property for the rest of his life. In 1897, in association with Jacob H. Schiff of Kuhn, Loeb and Company, Harriman bought the United States Government's holdings of Union Pacific securities, paying over $45,000,000 cash. The Government had foreclosed on Union Pacific in 1893, owing to the road's inability to meet the debt which Union Pacific had owed the Government for thirty years. In the open market, also, Harriman bought large amounts of Union Pacific stock at prices ranging between $25 and $30 per share. In 1899 he and his associates purchased the Chicago and Alton for $42,000,000, and in 1900 bought the St. Louis, Alton and Terre Haute Railroad.

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[7] *Commercial and Financial Chronicle*, Feb. 19, 1887, p. 797.

With great plans for railway consolidations in his mind, Harriman set out to control three traffic routes to the Pacific Coast. He was ultimately successful in controlling a southwestern route via the Southern Pacific and a middle route via the Union Pacific. In northern territory, however, he was unsuccessful owing to the opposition of James J. Hill, whom he challenged unsuccessfully in the Northern Pacific corner.

### James J. Hill

James J. Hill was born September 16, 1838, in

Rockwood, Ontario, a village forty miles west of Toronto. His father was first a farmer and then a village hotel keeper. At the age of fourteen, Hill began work as a clerk in the village store. After five years in that capacity, he decided to ship as a sailor in order to reach India, which at that time held a great fascination for him. He worked his way to New York City and also visited Philadelphia and Richmond. He was not satisfied with the opportunities afforded by the ships in the Atlantic harbors, however, and decided to go West to the Pacific Coast and there ship for India. When he arrived at St. Paul in 1856, he found that the last caravan westward for that year had already left. Like Christopher Columbus, he had failed to reach India.

Most of the remaining part of his life was spent in St. Paul. His first position was as a clerk on the levee. For five years he was employed with various packet companies running in and out of St. Paul. Gradually he accumulated money, and in 1865 started in for himself in the forwarding and transportation business. In addition, he organized a partnership to engage in the fuel business with a capitalization of $25,000. Within a few years this fuel business was earning a profit of $40,000 to $65,000 a year. Then came upon the scene the railroad engineers to survey and build the Northern Pacific Railroad. While Jay Cooke was financing this venture, Hill continued in the fuel business. In 1875 he bought out his partner, and organized the National

Fuel Company. By this time, however, the Northern Pacific Railroad was in trouble, and Mr. Hill became especially interested in a short line operated under the control of the Northern Pacific, called the St. Paul and Pacific. This road, saddled with a high bonded debt, could not pay its fixed charges. Northern Pacific, being unable to help the St. Paul and Pacific, released control to a receiver.

In 1876 Mr. Hill set out to gain control of the St. Paul and Pacific. The bonds were selling on the New York Stock Exchange at about 45. Most of the owners of the bonds were located in Amsterdam, Holland. A committee of these Amsterdam bondholders, organized to determine what their property was worth, found it was in very bad shape, and concluded that most of their investment was lost. They were in a mood to sell at a low price. Mr. Hill did not have enough money to finance the deal singlehanded, but persuaded three other men to join him, and after two years of negotiation, terms were agreed upon in 1878. Mr. Hill sold his interest in the National Fuel Company and put his money into the St. Paul and Pacific, the nucleus of the Great Northern Railroad. He continued in active command from 1878 until 1907 when he resigned as president.

The deal was completed just in time. Railroad securities had been reactionary from 1873 until 1877, but began a gradual recovery just after Mr. Hill and his associates bought St. Paul and Pacific. The bonds were bought in March, 1878, and a year later the road was able to take its property out of the hands of the receiver. A new company was formed: $44,000,000 of indebtedness under which the old railroad had labored was eliminated. In 1881 Mr. Hill's road joined hands with Northern Pacific, and acquired joint control of a line from St. Paul to Duluth. The next step was to push lines into the wheat fields of Minnesota, and by 1886 they were extended into Montana. In 1889 the Great Northern Railroad was incorporated to take control of all the Hill lines. When Hill secured control of the St. Paul and Pacific in 1879, the road consisted of 455 miles; in 1889 the Great Northern Railroad had control of 2,770 miles.

When the Northern Pacific needed reorganization in 1893, Mr. Hill took an active interest, since that railroad was a competitor of the Great Northern. For that reason he purchased a large interest in the stock of Northern Pacific.

## The Northern Pacific Panic

Mr. Hill was primarily interested in the Northwest. He had no designs on railroads running eastward or southward. His main desire was to control transportation in Minnesota and lines west to Tacoma and Seattle. Mr. Harriman, however, had broader ambitions. As soon as he acquired control of Union Pacific, he planned to gain control of lines running southwest to California, and also those in the

Northwest to Washington and Oregon. He desired to include Northern Pacific in his system, and in 1901 bought a majority of the stock. Under his buying the stock advanced rapidly. It turned out, however, that some of the purchases he had made did not represent acquisition of stock—some of the sellers were speculators who were selling short. Then developed an unusual situation. Ordinarily, the bankers of Wall Street stand ready to lend the stock of almost any corporation to speculators who sell short. In 1901, however, there was no Northern Pacific stock available to borrowers. Mr. Hill and J. P. Morgan were aware that Harriman and Kuhn, Loeb & Company were attempting to buy control of this stock, and refused to accommodate speculators as had been their custom. They held tight to such stock as they controlled. Similarly, Harriman and his bankers obtained and kept the actual certificates as fast as they could buy them. The result was that when speculators attempted to cover their short sales, the stock leaped upward 10, 20 and 50 points at a time. Between May 1 and May 9 it rose from $115 to $1,000 a share. Then occurred what has been called the Northern Pacific Panic of 1901.

As the stock advanced from 115 to 150 and then leaped upward to 200, 300 and 500 dollars a share, many "shorts" were ruined. Those who had considerable capital realized on holdings of other securities to cover the cost of buying Northern Pacific. This heavy selling of other securities caused a panic in the stock market. To relieve the situation Mr. Schiff of Kuhn, Loeb & Company suggested settling with the "shorts" at a price of 150. Many British speculators, caught short, were given the same terms. When the short contracts were settled at this price, it was found that while Harriman had control of a majority of the preferred and common shares combined, Mr. Hill and J. P. Morgan held a majority of the common stock alone, and therefore were in control of Northern Pacific. Hill promptly acted to prevent future corners by competitors. To this end the Northern Securities Company was formed, both factions depositing their Northern Pacific shares with the new company and receiving shares of Northern Securities stock in exchange. (The Government tested the legality of this merger before the Supreme Court, gaining a victory in 1904 which caused its dissolution.)

## The Millionaires' Panic of 1903

It is noteworthy that the speculative boom in Wall Street in 1901 occurred while Continental Europe was suffering from depression and the stock markets in Germany were declining rapidly. This independent trend in Wall Street was possible because America had borrowed little in Europe for a decade and had enjoyed a large foreign credit balance. In 1902, however, the situation changed. America's export balance declined sharply. The specie of the

New York banks declined from $194,000,000 in February, 1902, to $150,000,000 the third week of September, and remained subnormal during 1903.

The issue of the new securities in America had reached a temporary saturation point. In addition to heavy bond issues there had been large flotations of industrial stocks. The banks were loaded with new securities. Insurance companies and banks had been forcing matters until, as one insurance official in 1903 stated, "they were strapped for money by engagements already made". In this situation, the reduced bank reserve rudely reminded Wall Street promoters that America was not emancipated from Europe. The national banks were still operating under an archaic law requiring a rigid 25 per cent cash reserve against deposits. The lower gold reserve entailed restriction of credit and produced in 1903 a condition of "indigestible securities". Capitalists withdrew support from stocks. Steel Common dropped from 65 to 15, and in 1904 sold as low as $8 a share. Other securities were sold at a sacrifice; a sharp reaction occurred in the iron and steel industry. There was no world crisis, however. In Europe, financial conditions were comfortable and merchandising in America continued in fair volume. Presently aid from London relieved the congested investment situation in New York, and before the end of 1904 Wall Street speculators and captains of industry were proceeding to new records in stock manipulation and industrial production.

## The Panic of 1907

The business cycle which developed from 1904 to 1908 was more nearly "normal" than any other cycle in history. No serious irregularities occurred during the period of prosperity from 1904 to 1907. There was speculative activity in Europe, Australia and South America, as well as in the United States. The banking crisis in 1907 was world-wide.

The intensity of the panic of 1907, however, was undoubtedly greater in the United States than in foreign countries. That was partly because America had borrowed heavily from abroad and was therefore financially vulnerable. Then, too, the heights to which the daring manipulation of Mr. Harriman and the enthusiasm of the public had carried prices invited collapse of the speculative position. Union Pacific sold its holdings of Northern Pacific and Great Northern and with the proceeds and borrowed money bought $131,000,000 of New York Central, Baltimore and Ohio and other railway shares between June 30, 1906, and February 28, 1907.[8] The dividend rate on Union Pacific shares was increased from 6 to 10 per cent in August, 1906, and the stock rose from 140 to a peak of 183 early in 1907. Meanwhile, the general level of quotations, already inflated spectacularly between 1904 and 1906, was elevated to a still more hazardous level. Atchison was rushed up from 86 to 108, Southern Pacific from 63 to 96 and other shares in similar fashion.

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[8] A. D. Noyes, *Forty Years of American Finance*, p. 357.

While Wall Street was forcing matters as if there were no practical limit to money market facilities, economists in Europe were writing articles on the existing financial crisis. The Bank of England and continental banks took action to restrict credit. Loans to America stopped. British investors dumped securities in New York. In March, 1907, the New York Stock Exchange suffered the consequence. Prices "melted away". The stock market was heralding what was in store for trade eight months later.

## Banking Defects

A crisis in 1907 was inevitable. Prices of securities and commodities had to decline in any event. The degree of panic would have been less, however, had the country enjoyed a sound banking system.

In New York the shaky condition of the trust companies was an unhealthy factor. Originally the trust companies had been organized merely to handle trust funds and were not legally required to maintain cash reserves. In the years preceding 1907, however, the trust companies in New York City had expanded their operations. They were doing a regular banking business, making loans in the same fashion as the national banks which carried cash reserves of 25 per cent against deposits. The actual cash in the vaults of the trust companies was scarcely more than 2 per cent of deposits. They could lend more freely than the banks; they could offer higher rates to depositors. They grew faster and more recklessly, and were badly overextended when confronted by the money crisis in 1907.

The day of reckoning for these mushroom companies came in October, 1907. In a crisis they could not stand alone. Most of them refused to belong to the New York Clearing House, which required members to keep a cash reserve of 10 per cent in cases where no reserve was specified by statute, and hence each trust company had to depend upon some "big brother" bank to handle its checks in the Clearing House. The Knickerbocker Trust Company had such an arrangement with the National Bank of Commerce. But in October, 1907, when the latter's cash reserve fell below the legal limit, it felt compelled to throw off responsibility for the Knickerbocker Trust. Late on October 21, it announced that it would refuse to accept Knickerbocker checks on the following morning. The news spread, and on the morning of October 22, the latter's depositors made haste to withdraw funds. After paying out $8,000,000 the doors were closed. Then occurred the runs on the Trust Company of America and the Lincoln Trust. In some Western states, governors declared bank holidays. In Oklahoma there was a six-day moratorium.

Interior banks withdrew money from New York. As a result of these withdrawals and the money taken out by depositors and hoarded, the cash of the New

York City banks declined from $282,000,000 in August to $216,000,000 in November. This decline would not have caused the failure of solvent concerns if it had not been for the rigid restrictions of the National Bank Act, requiring the banks to carry reserves of 25 per cent against deposits. But in November, owing to loss of cash, the New York City banks reported a "legal" reserve deficit of $54,000,000. This meant that the banks would have to decrease loans and deposits approximately $150,000,000 or more in order to keep within the provisions of the Bank Act. Under these conditions the bankers could afford no relief to customers. For instance, a manufacturer who had been promised loans of $30,000 in October, $40,000 in November, and $25,000 in December to provide for pay rolls and the purchase of materials, was informed by his banker that the money could not be advanced according to the previous promise. With bank reserves already below the legal limit, further loans would involve a violation of the law.

Loans to brokers were cut down drastically and prices on the Stock Exchange received little support. The large financiers were already "strapped". With stocks at bargain prices, a great deal could be purchased for a thousand dollars, but few had that much surplus available. As compared with prices earlier in 1907, Union Pacific declined from 183 to 100; Atchison, from 108 to 67; New York Central, from 134 to 89; and Southern Pacific, from 96 to 64.

United States Steel Common declined from 50 to 22, and other industrial shares similarly.

A decline in Tennessee Coal and Iron shares threatened the brokerage firm of Moore and Schley with insolvency. It had been previously planned to consolidate this company with the Republic Iron and Steel Company and the Sloss Sheffield Company. Owing to the financial embarrassment of Moore and Schley, however, the stock was offered to the U. S. Steel Corporation. Judge Gary and J. P. Morgan were willing to make the purchase but feared it might be in violation of the Sherman Anti-Trust Law to add more to the holdings of the Steel Corporation. An interview with President Roosevelt was arranged. Judge Gary and H. C. Frick made a hurried trip to the White House with J. P. Morgan on the telephone in New York. With the facts before him, President Roosevelt gave his approval.

The U. S. Steel Corporation had $76,000,000 in cash in various banks. But these banks had already used the deposits of the U. S. Steel Corporation in making loans to other concerns, and if the Steel Corporation withdrew this cash for payment to the owners of the Tennessee stock, insolvency in some other quarter would result. It was finally arranged to exchange the bonds of the U. S. Steel Corporation for the stock of the Tennessee Coal and Iron Company; and control of the latter company, owning 3 per cent of the total iron ore deposits of the country, was acquired by the Steel Corporation.

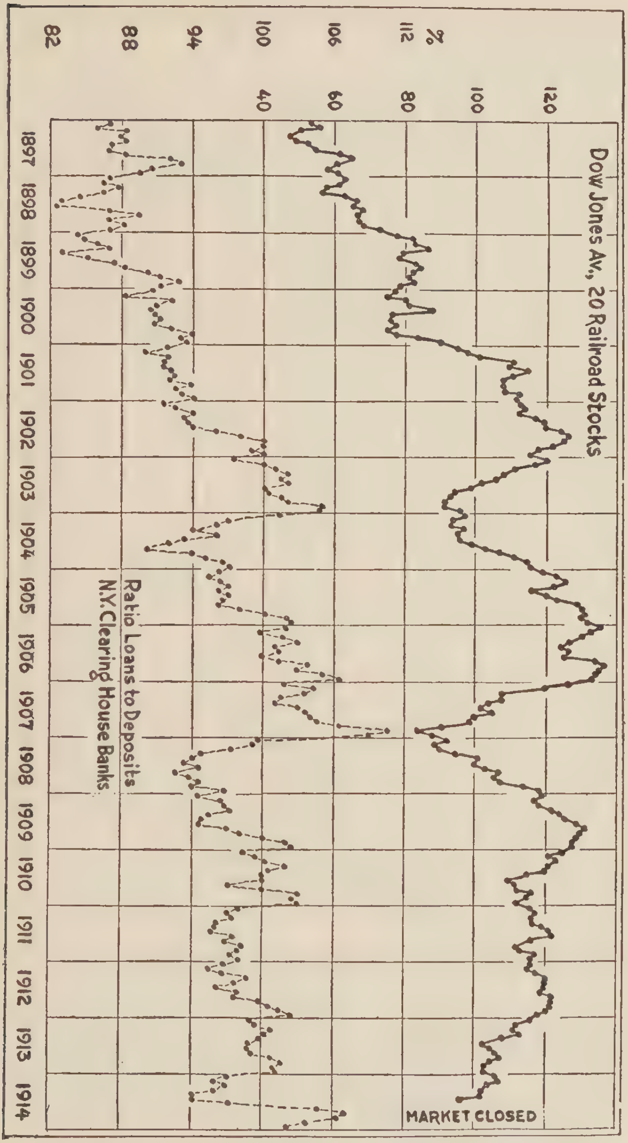
The substitution of the bonds of the Steel Corporation for the stock of the Tennessee Coal and Iron Company immediately eliminated one important case of impending bankruptcy. The major problem of the panic, however, still remained. To relieve the currency shortage, Secretary Cortelyou agreed to deposit $25,000,000 of government money in New York banks and J. P. Morgan formed a $25,000,000 money pool. On October 26 the New York Clearing House issued certificates which could be used to settle debts. This practice was adopted in other cities. A total of over $200,000,000 of Clearing House Certificates was put into circulation as emergency currency.

The necessity for such a make-shift currency to relieve a general condition of commercial insolvency was a national disgrace. Under the Federal Reserve System this amount of currency, and many times more, can be obtained on a moment's notice by pledging acceptable collateral in exchange for federal reserve notes. But the United States, the richest nation in the world, with a wealth of $130,000,000,000 in 1907, had no such monetary mechanism. Such things as blind political prejudice and continual excitement over the greenback and free-silver questions had kept over two generations of Americans from discussing the need of a sound banking system. After the panic of 1907, however, the matter was brought to the attention of Congress and the Aldrich Commission was appointed to report on a centralized banking system. The Federal Reserve Act was finally passed in 1913.

### End of the Railway Age

From 1865 to 1910 the railway mileage of the United States increased from 35,000 to 250,000 miles. During this period, railway magnates had almost unlimited power in buying and building railways, and in fixing wages and freight rates.

During the decade following 1910, however, promoters of railroads and manipulators of railway securities became comparatively inactive. The Supreme Court had checked centralization of railroad control by the Northern Securities Company dissolution decision of 1904, and in 1912 ordered the unscrambling of Mr. Harriman's merger of Southern Pacific with Union Pacific. A different sort of check came in July, 1906, when the Hepburn Act gave the Interstate Commerce Commission a degree of control over freight rates. Under this law the Commission could prevent increases in freight rates, but only in cases where complaints were made by shippers. In June, 1910, however, the railroad magnates were finally placed under the complete domination of the Commission as far as freight rates were concerned. In that month, after a long debate, the Mann-Elkins Act was passed, which, as stated in the annual report of the Commission, conferred "new rights and remedies" upon the public. The powers


Dow Jones Av., 20 Railroad Stocks
Ratio Loans to Deposits
N.Y. Clearing House Banks
MARKET CLOSED
%
112
106
100
94
88
82
120
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80
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40
1897
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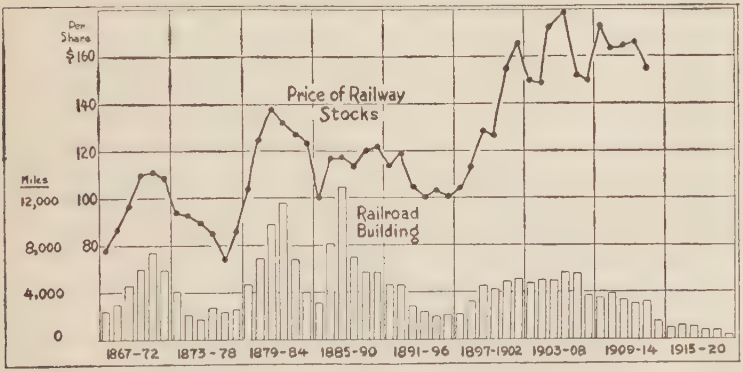
of the Commission were greatly increased as compared with the Hepburn Act of 1906. The new law gave the Commission power to suspend all proposed advances in freight rates and also to investigate rates and initiate rate reductions without waiting for complaints from shippers. Thus, the gross earnings of the railroads were placed at the mercy of the Interstate Commerce Commission. The cases to be decided by the Commission henceforth would involve more wealth than those usually brought before the Supreme Court of the United States. In the cases settled during 1910–1912, 70 per cent of proposed rate increases were refused.

While the Mann-Elkins Act was under debate, railroad securities began to fall into disfavor. British investors began to turn away from American railroad securities and invest more heavily in Canada and other dominions of the British Empire. The stock market declined steadily from January, 1910, until the new Act was passed in June and for a month thereafter. The bull market of 1908–1909, during which Mr. Harriman manipulated Union Pacific from 110½ to 219 dollars a share, marked the end of spectacular manipulation of railway stocks under the old régime.

Another factor in checking the building of new railroads was the fact that the country was pretty well grown up. Every state in the Union had been well covered with transportation lines. America was entering upon an era when intensive industrial development was to become a more important feature of economic growth than expansive railroad building. An important phase of this intensive development was the increasing use of motor trucks and busses in short haul transportation.

There had been a tradition in Wall Street that the prosperity periods of the business cycle in the United States had to be accompanied by boom activity in railroad building. That had been true of the periods of prosperity which began in 1868, 1879, 1886, 1897 and 1905. This tradition was broken after 1910. The country was entering upon a period when the production of petroleum, rubber, automobiles and steel, together with residential construction work, was to form the backbone of prosperity. From 1910 to 1923, the annual production of petroleum rose from 210,000,000 to 732,000,000 barrels; the imports of rubber, from 101,000,000 pounds to 692,000,000 pounds; the output of automobiles, from 187,000 to



4,000,000; and the production of pig iron, from 27,000,000 to 40,000,000 tons.

It is possible that economic changes would have developed along these lines, even without the World War. There is no doubt, however, that the high wages and commodity prices during the period of war inflation tended to discourage railroad building, and simultaneously caused capital to seek investment in petroleum, automobiles, steel and gun powder. Harriman and Hill passed on, and Schwab, Henry Ford, the Du Ponts and other industrialists came to the fore.

# CHAPTER XVII

## THE WORLD WAR

In July, 1914, an investor who owned 100 shares of Steel Common, standing in a brokerage office in Wall Street, asked his broker why the price of the stock was rapidly declining from 60 to 50. The broker replied that the Archduke Francis Ferdinand of Austria had been murdered in Serajevo. The investor inquired what that had to do with the steel business in Pittsburgh and Gary, Indiana. The broker advised him to sell out first and study European politics and international finance later. The relation of this royal murder to the clash of interests between the Central Powers and the Allies; Pan-Germanism and the Allied Entente; the amount of Steel Common held in Europe; the probability that millions of American securities would be dumped upon the New York Stock Exchange if political affairs in Europe remained unsettled—all these subjects had escaped the attention of this investor. He knew nothing about the relation of foreign debts to stock market movements. Moreover, the case of this investor was not an isolated one. The majority of merchants were ignorant of why they would suffer financial distress if Europe withdrew capital from the United States with the country still manacled by the National Bank Act. In 1914 there was need to be well informed regarding European politics, foreign debts, and the defects of the old banking system.

Since the World War, conditions are greatly changed. America has been largely emancipated from the influence of Europe in money market affairs. The Federal Reserve System is the chief factor in this economic liberation. The change from a debtor to a creditor relation with Europe is also an important consideration. From the money market standpoint it is no longer so necessary to give anxious attention to European conditions as it was in 1914 and the preceding hundred years.

There are two reasons, however, why merchants, bankers, investors and students of the business cycle should continue a degree of interest in European politics and foreign money market conditions. First, the money market is an international affair. Movements of gold to and from America, Europe, India and elsewhere will always exert an influence upon money rates and the prices of stocks and commodities. Second, American loans abroad will cause an increasing interest in foreign politics, because payment of interest and principal will have practical meaning to American taxpayers and investors.

## The War-Breeding Politics of Europe

A World War threatened in 1904 when Austria annexed Bosnia and Herzegovina. But because Russia was at war with Japan and could not rush an army to the Austrian border to stay the hand of Vienna, the war-dogs of the Continent were kept in their kennels. The World War was not started by the Moroccan dispute of 1905 because this affair merely brought Germany into conflict with France and Great Britain. Italy, the supposed ally of Germany, did not manifest a desire to support her. Moreover, there was nothing in this Moroccan dispute to excite the peoples of Austria-Hungary and Russia. There was a "common cause" between England and France against Germany, but Russia saw no "common cause" in this Moroccan dispute nor did Austria-Hungary. Consequently, the dispute was settled by diplomacy, but the Algeciras Treaty of January, 1906, left Germany in a bad humor.

Germany soon complained that France was not observing the policy of equal commercial opportunity for all countries in Morocco. In 1911 Germany decided to rattle the sabre. German capitalists had obtained concessions from the Sultan of Morocco covering about 20 per cent of the area of the country and this was resented in France. On July 1, 1911, the German warship, *Panther,* entered the port of Agadir, Morocco, to demonstrate that the financial interests of German citizens would be protected; war in Western Europe seemed inevitable. But to avoid war, France offered Germany 250,000 square kilometers in Northern French Congo if Germany in return would recognize France's predominant position in Morocco. With England displaying strong support of France in the negotiations, Germany accepted the terms, albeit with bad grace and with manifestation of bitter feeling among German officials and industrialists. Shortly thereafter the German army was increased; France responded by passing the so-called three-year military law.

The stage was now set for a war provided an occasion could be found for starting hostilities.

The Balkan War of 1912 was the last straw for Germany. In October of that year, Bulgaria, Servia and Greece jointly attacked Turkey. They were victorious. But in dividing the spoils of war it appeared that Servia and Greece fared better than Bulgaria. This was a victory for Russia, Great Britain and France, who were supporting Servia and Greece. Bulgaria became restive and in June, 1913, attacked Servia to gain a larger share of the territory acquired from Turkey. Thereupon Russia directed Roumania to invade Bulgaria from the rear; Bulgaria was checkmated, hostilities ceased, and Servia emerged from the war the proud possessor of a large slice of Turkey.

This was a more bitter blow to Germany than the Moroccan settlements of 1906 and 1911. Servia, the ally of Russia, completely blocked the project of a German controlled railroad between Berlin and Bagdad.

Under the terms of the Treaty of Bucharest in

November, 1913, moreover, Greece, sponsored by Great Britain, secured possession of Saloniki, the port which Austria greatly desired to give her an outlet into the Mediterranean. There was ill-concealed rage in Vienna and Berlin. And when the Archduke of Austria was murdered at Serajevo in July, 1914, both in Vienna and Berlin there was an immediate decision that the whole question of Pan-German ascendency in the Balkans, Asia Minor, Morocco and African colonies should be settled at once on the field of battle.

## America During the War Panic of 1914

When Germany invaded Belgium, everywhere the delicate structure of bank credit received a shock. Industry was dislocated. That was to be expected. But America did not deserve the financial strangulation actually experienced from August to November. After the panic of 1907 Congress appointed the Aldrich Commission to make a report on a new banking system for the United States to eliminate the defects in the national banking system. The Aldrich Plan was reported in 1909 and Congress debated the subject in 1910. But in the elections of November, 1910, the Democratic party won a majority in Congress and the Aldrich Plan was doomed to defeat or revision. Final action on a central reserve banking system for the United States could not come until there was a common purpose in Congress and the White House. In the elections of 1912, the Democrats gained control of both branches of the government, and what is now known as the Federal Reserve System was adopted in November, 1913.

By the adoption of the Federal Reserve Act the country was declared to have won its economic freedom. This legislation was considered an economic declaration of independence. No more would there be unnecessary bankruptcies on account of an inadequate banking system, as had been the case in such years as 1873, 1893 and 1907. When the World War broke out at the end of July, 1914, however, the country again experienced financial paralysis. It was not yet emancipated from the old national banks. The leaders of the Democratic party had rejected the Aldrich Plan idea of one great central bank with many branches and had substituted a plan for dividing the country into twelve districts with a central reserve bank in each district. This work of organizing the twelve different regions was still in progress when the World War broke out. Consequently, the nation went through three months of financial paralysis after war was declared in 1914 without any aid whatsoever from the Federal Reserve System.

Fortunately, the industrial position was not overexpanded in 1914. The country had just completed a long period of liquidation and readjustment from the spring of 1913 to July, 1914. Trade had been quiet and fundamentals were sound. The panic, due to political procrastination in providing the country with a workable banking system, was largely confined to the money market. That the business world suffered some financial embarrassment, however, is indicated by the credit policy of the New York City banks. In the middle of June, 1914, the New York banks had deposits of $1,577,000,000. A cash reserve of 25 per cent against these deposits was legally repuired. This meant a legal requirement of $394,000,000. Actually these banks had $440,000,000 as cash reserve, or a $46,000,000 surplus above legal requirements. But within two weeks after the War broke out, the cash reserve suddenly dropped to $316,000,000. This was partly due to hoarding of gold, but the chief strain came from the necessity of shipping gold abroad to pay for American securities which British investors sold on the New York Stock Exchange during the last week of July. Some short-term notes of New York City, maturing in London, also had to be paid off, and likewise a large volume of current trade bills which American merchants had previously negotiated with British bankers. The current obligations maturing were a more serious problem than the return of stocks and bonds. After the close of business on July 30, it was decided not to reopen the Stock Exchange, and it remained closed from July 31 until the middle of December. This closing of the Exchange largely prevented the return of American securities from

Europe during the crisis. But the floating debt had to be paid.

The export of gold from May to November amounted to $165,000,000. Under an intelligent banking system, it would have been possible to issue several hundred millions of new paper currency to take care of the needs of the business public while the gold was being exported. In August, 1914, this was impossible. On August 15, when the deposits of the New York City banks had declined to $1,438,000,000, the cash reserves of $316,000,000 were $44,000,000 below the legal requirements. The banks were not complying with the law. They did not dare to expand credit for the benefit of the business public. To comply with the law, a reduction of loans and deposits was in order. Credit restriction was necessary until the banks could build up cash reserves to a 25 per cent relationship with deposits. The law was disregarded to a degree, but it was observed enough to cause some economic distress.

By September the rate on commercial paper had risen from 4 to 7 per cent; the rate on loans secured by good stocks and bonds was 8 per cent. The pressure continued until November. But on November 14, the cash reserves of the New York City banks recovered to $379,000,000, which was over 25 per cent of deposits. Thereupon money rates declined to around 5 per cent. On November 16, by a proclamation of Secretary McAdoo, the federal reserve banks were established—just four months too late to prevent the shock.

## Financial Emancipation of the United States

In 1914 there were five factors which made America financially helpless during the money market crisis which attended the outbreak of the World War.

1. Lack of currency for retail circulation. The supply was inadequate when gold exports forced the banks to restrict credits.
2. Gold was scattered, preventing efficient use. Mobilization of gold was needed.
3. Large amounts of credit for the export and import trade had been secured in Europe instead of in the United States. These foreign credits were suddenly recalled in 1914. American banks could not offset this with fresh credits at home, being restricted by rigid "legal reserve" requirements.
4. The large amounts of American stocks and bonds held in Europe made the American money market subservient to Europe during a crisis.
5. The stock of gold was too meager considering the size of the country and the tremendous volume of industrial production and commerce.

The first three of these factors of weakness were removed when the federal reserve banks were established on November 16, 1914. Once the new system was inaugurated the country was provided with a source of emergency currency; the banks felt free to extend credits liberally to export and import merchants and the gold reserves were mobilized into twelve central reservoirs. Moreover, the other two points of weakness (foreign debts and slender gold reserves) were quickly eliminated.

For one hundred years before the War, America had been a heavy borrower in Europe. The American stocks and bonds held in Europe in 1914 totaled between four and five billion dollars. Within three years after the outbreak of the War, however, the merchandise exports from the United States were $6,859,000,000 in excess of merchandise imported. In three years the accumulated borrowings of a century had nominally been wiped out. By this we do not mean that all of the American securities held abroad were returned to the United States. Mr. L. F. Loree, President of the Delaware and Hudson Railroad, who compiled an estimate of the securities actually returned during this period, put the figure at about $2,000,000,000. But meanwhile England and France floated the Anglo-French Loan of $500,000,000 and arranged other borrowings in the United States, so that the American foreign debt, on balance, had been almost entirely canceled. Then in April, 1917, the United States entered the War. Congress authorized the Treasury to lend the Allies a total of $10,000,000,000. This sum was entirely expended in 1917, 1918 and 1919.

The foreign trade balance sheet of the World War period was as follows:

From July, 1914, to December, 1919, the merchandise exported from the United States exceeded imports by $14,539,000,000. The United States received $1,000,000,000 in gold and $2,000,000,000 in American securities returned from Europe. The remainder was covered by loans of $10,000,000,000 from the United States Treasury to the Allies—roughly, $4,000,000,000 to Great Britain, $3,000,000,000 to France, $2,000,000,000 to Italy and $1,000,000,000 to other countries. There were other foreign loans arranged by New York bankers and minor credit items, such as payments to foreign ship owners, to cover the remainder. Thus, in five and a half years the American debt to Europe was reduced from over $4,000,000,000 to $2,000,000,000 while the debt of foreign countries to the United States increased by $10,000,000,000. Instead of being a debtor to Europe to the amount of over $4,000,000,000 the United States was a creditor for nearly $8,000,000,000 net. Instead of paying $200,000,000 a year for interest on the foreign debt, the United States was in a position to receive $400,000,000 a year from foreign debtors when, and if, they began to pay in full.

The financial emancipation of the United States was now completed. The bugaboo of foreign debt and subservience to the European money market was eliminated. This did not mean, however, that there would be no more panics in the United States. To avoid panics it is necessary to refrain from overextending domestic credit. The fact that a severe crisis came in 1920 meant that the United States was making improper use of the Federal Reserve System, that is, improper use from the standpoint of sound banking.

### The Panic of 1920

The panic of 1920 was forced upon the country by the Government. After the Armistice in November, 1918, the Treasury continued to borrow heavily from the banks. It had already advanced $7,000,000,000 to the Allies but Congress had authorized total advances of $10,000,000,000 and the remaining $3,000,000,000 were borrowed from the banks and advanced to the Allies in 1919. This greatly stimulated export trade. The Allies spent money freely for American merchandise as long as this easy money was forthcoming from the United States Treasury. In 1919, the merchandise shipped from the United States to Europe totaled $5,187,000,000 as compared with $2,100,000,000 per year in 1922 and 1923, after commerce had been restored to a trade basis. The Government also borrowed money to complete its shipbuilding program. The United States Merchant Marine was increased from 7,500,000 gross tons on June 30, 1918, to 10,400,000 in 1919, 13,800,000 in 1920 and 15,700,000 in 1921. This adventure of the Government in the shipping industry added to the demand for labor and materials and was a factor in blowing the credit bubble. A third political factor was the financial management of the railways. Railway wages were increased to a high level but freight rates were not increased proportionately. The deficit was covered by taxes or money borrowed from the banks. In a sense, the railway employes had more money to spend than they earned; shippers obtained transportation at less than its cost and therefore had an abnormal surplus to spend. The total purchasing power of railway employes and shippers was greatly increased by this unsound railway management, and meanwhile the railway companies were able to spend freely for maintenance and equipment while the Treasury paid the bill. The Government had agreed to cover deficits in operating revenues and put cash in railway company treasuries so that they would enjoy, collectively, a net income equal to the pre-war total.

Probably the most important factor of all was the influence of the Treasury over the federal reserve banks. The Treasury wanted to sell Victory Notes at a low interest rate. It influenced the federal reserve banks to continue lending money against Liberty Bonds at 4¼ per cent at a time when actual market rates for money were 6 to 8 per cent. The discount rates of the federal reserve banks should have been advanced to 6 per cent in July, 1919. But the 4¼ per cent rate on loans secured by Liberty Bonds was continued during the entire year and meanwhile loans to member banks secured by commercial paper were made at 4¾ per cent. All over the country bankers were getting money from the federal reserve banks at 4¾ per cent and lending it at 6 to 8 per cent. In Wall Street the banks were getting money from the Federal Reserve Bank of New York for 4¼ per cent and lending it to speculators at 6 to 8 per cent. The bankers could not be blamed for accepting the opportunity to make a big profit out of the situation. The responsibility rested upon the Treasury.

As a result of the credit inflation in connection with loans to the Allies, shipbuilding, the railway deficit, and the federal reserve discount policy, the total incomes of the American people reached $67,000,000,000 in 1919 as compared with $32,000,000,000 in 1912. The loans of the commercial banks throughout the country increased 25 per cent from June, 1919, to June, 1920, and the loans and investments of the federal reserve banks in 1920 reached $3,400,000,000 as compared with only $2,000,000,000 of gold. (Normally, loans and investments are less than the gold reserve.)

The credit bubble was full blown. Then natural economic laws began to work. To pay for the imports of silk, wool, sugar and other commodities recklessly imported beyond the power of the public to buy (at the high prices prevailing), it was necessary to export gold. From June, 1919, to April, 1920, the country lost $400,000,000 of gold. To stop this outflow of gold, the banking authorities were forced to adopt corrective measures. In February, 1920, the New York Federal Reserve Bank increased its discount rate to 6 per cent and in June to 7 per cent.

Bankers restricted credit. This put a stop to extravagant speculation in securities and in silk, wool, cotton, grain and other commodities.

By the end of 1920 the restriction of credit had forced a considerable decline in commodity prices. Cotton declined from 43 cents to 15 cents a pound; corn from $2.15 to 67 cents a bushel. In the East, manufacturing operations were curtailed to about 30 per cent of capacity. In the West, the reduced income of the farmer made it difficult to pay debts. There was a great outcry against the federal reserve banks. They were accused of deliberately curtailing loans to bring on a panic. As we have already seen, however, the trouble was that loans were already too large. The only criticism justified was that the federal reserve banks had been too liberal with credit and had waited eight months too long before increasing discount rates.

How long would depression last? The answer was that depression had to continue until the member banks paid off what they had borrowed from the federal reserve banks in excess of a normal amount. It was not until the end of 1921 that loans were reduced to a normal figure.

The disaster which befell the country in 1921 was evidence that the policy of inflation in 1919 and 1920 had been erroneous. A severe depression could have been avoided if the preceding inflation had been prevented. In its first great test, the Federal Reserve System failed in preventing a panic. The fault lay entirely with the Government at Washington. From the standpoint of sound banking policy the federal reserve banks were badly mismanaged in 1919.

There is only one alternative to this conclusion. It may be argued that social policy was more important than sound banking policy. In 1919 there were 2,000,000 men in the American Army in France who were being brought back to the United States. As a matter of social policy it was desirable to find employment for them immediately. The Government at Washington became vitally interested in this problem. Supplies of merchandise which had been bought by the Government were locked up in warehouses. This was to make goods scarce and give producers a good market. That would create employment. The building of ships also gave employment. The Government published bulletins advising people not to wait for lower prices if they intended to build. This was done to encourage construction activity and provide employment. As a result of the policies adopted to stimulate industry, trade was active for twelve months after most of the soldiers returned from France. Practically all of them obtained jobs. The social policy of the Government was successful. It is true that many of the veterans lost their jobs in 1921 during the period of depression. But as one man remarked, they at least had an equal opportunity with the stay-at-homes to retain their positions or "get fired". If we grant that employment was more important than banking policy, the orgy of inflation was justified.

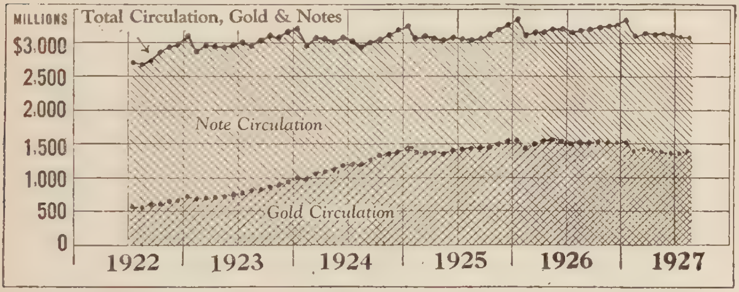
## A New Era in Federal Reserve Policy

The policy of the federal reserve banks during 1923–1924 displayed an advance in center reserve bank management over anything witnessed in the history of the European central banks. The classical principle followed in England before the War was to permit trade expansion and speculation to proceed unmolested until there was an increase in market discount rates and a decrease in the gold reserves of the Bank of England, and then to check inflation by increasing the official discount rate. When the gold reserve was restored, the bank rate would be lowered.

This policy presupposed extremes of prosperity and depression. Such extremes are undesirable. In behalf of the Bank of England, however, it may be said that no other policy was possible in a country of only 45,000,000 population and banking reserves which represented only a small fraction of the total bank reserves in all gold standard countries. The United States, however, has reached a stage of development where it need not experience the extremes of prosperity and depression which would result if the pre-war policy adopted by the Bank of England should be followed. The wealth of the United States in 1927 is close to $400,000,000,000. The national income is approximately $90,000,000,000 per year, or more than the aggregate income of Great Britain, France, Germany and Italy combined. The stock of monetary gold in the United States is larger than that of all Europe. This preponderance of economic magnitudes permits the United States to adopt a policy of managing the federal reserve banks which could not be followed in managing the Bank of England in pre-war years. The Bank of England could only adjust its policies to conditions in America and Continental Europe. The federal reserve banks, however, can be managed more exclusively with regard to domestic conditions, because the trade and bank credit of the country are a large fraction of the world total. Moreover, the trade of the United States is over 90 per cent domestic while that of Great Britain is more largely international. It is only natural, therefore, that the Federal Reserve Board in Washington has refused to follow the policy adopted by the Bank of England in the nineteenth century.

The Federal Reserve Board announced its policy in April, 1923, when it stated that the loans and discount rates of the federal reserve banks would be regulated according to the condition of production, employment and the general state of credit and not with reference mainly to the gold reserve.

Even more convincing than this statement of principle is the brilliant manner in which the federal reserve banks were managed during 1923 and 1924. In April, 1923, there was overbuilding and an excessive demand for labor. A restriction of credit and an increase in the discount rate of the federal reserve banks were necessary. But effective restriction was made difficult on account of the great influx of gold from abroad. The country imported $667,000,000 of gold in 1921, $238,000,000 in 1922, $294,000,000 in 1923, and $258,000,000 in 1924—a total of $1,457,000,000 in four years. According to the pre-war policy of the Bank of England, this gold would have been permitted to swell bank reserves and could have been used as a basis of credit inflation. But the federal reserve banks proceeded to "sterilize" the redundant gold. Instead of permitting all of it to accumulate in the reserves of the federal reserve banks as a basis for credit inflation, an attempt was made to put gold into circulation through the medium of gold certificates; to prevent inflation, $521,000,000 of federal reserve notes was withdrawn from circulation and retired. The total circulation was stabilized. By this skilful work, the potential credit inflation was measurably prevented. This stabilizing of the cur-



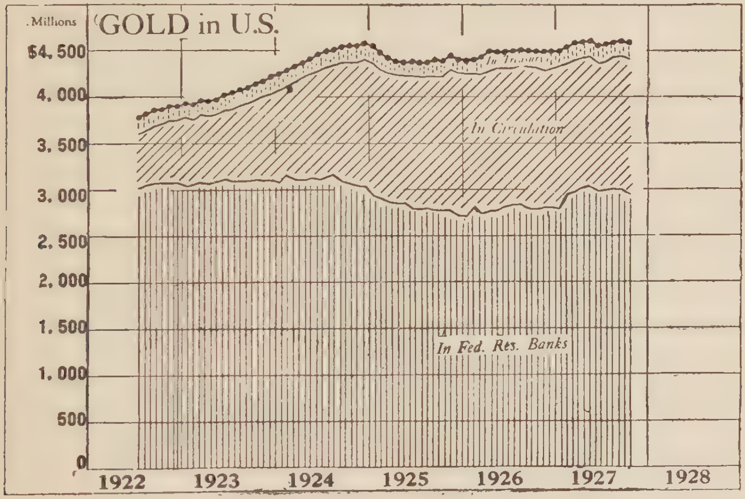
rency could not have been accomplished if the prewar banking mechanism had been in vogue during 1923–1924. The diagram on page 453 shows how the note circulation declined as the gold circulation increased.

The record of net gold imports and exports from 1914 to 1927 is as follows:

Gold, United States, 1914–1927

| Year Ended June 30 | Net Imports (+) Net Exports (—) | Total Monetary Gold June 30 |
|---|---|---|
| 1914 ......... | $— 45,500,000 | $1,871,612,000 |
| 1915 ......... | + 25,345,000 | 1,973,330,000 |
| 1916 ......... | +403,759,000 | 2,450,516,000 |
| 1917 ......... | +685,255,000 | 3,018,964,000 |
| 1918 ......... | — 66,439,000 | 3,145,681,000 |
| 1919 ......... | — 54,212,000 | 3,112,321,000 |
| 1920 ......... | —315,881,000 | 2,707,866,000 |
| 1921 ......... | +505,022,000 | 3,294,910,000 |
| 1922 ......... | +440,973,000 | 3,784,652,000 |
| 1923 ......... | +235,068,000 | 4,049,554,000 |
| 1924 ......... | +406,819,000 | 4,490,807,000 |
| 1925 ......... | —114,585,000 | 4,386,196,000 |
| 1926 ......... | + 97,288,000 | 4,500,977,000 |
| 1927 ......... | +147,911,000 | 4,565,070,000 |

In estimating the total monetary gold in the country there are two things to consider: first, some of the gold imported is used in the arts; second, the total includes gold mined within the United States. Consequently, the total monetary gold cannot be calculated merely by adding imports or subtracting exports. The Treasury issues a monthly statement showing the monetary gold owned by the federal reserve banks and the Treasury, and the amount in circulation, the latter largely in the form of certificates. The following chart shows this distribution since July, 1922.



# CHAPTER XVIII

## FOREIGN DEBTS AND FOREIGN INVESTMENTS OF UNITED STATES

Can investors afford to invest capital in young and undeveloped countries? The factor of industrial youth favors an affirmative answer. Youth implies future growth. A dollar borrowed today can be repaid threefold with ease a generation hence. But the borrowing country, in addition to youth, must have economic virtues and a racial instinct for moral responsibility in financial dealings.

Some countries have economic resources which could easily be made to respond twofold or more to the application of invested capital but lack the habit of making both ends meet. For them no pleasure is derived from burning an old mortgage and no gratitude is rendered to the lender, however much the borrowed capital may have improved their lot. Other countries may possess financial integrity and the will to repay the lender only to find that on pay day the borrowed capital has not produced sufficient income for both interest and sinking fund. In general, moral responsibility is more important than the potential productivity of undeveloped resources as the contrast between Switzerland and Russia has shown. In a really good risk, however, both factors should be combined.

To what extent should a country mortgage its future? A country whose resources are rather fully exploited may have difficulty in meeting new financial obligations. Its future growth is largely contingent upon the service it may render to other countries which are developing rapidly. The newly developing country, however, can afford to borrow freely for industrial purposes. The United States borrowed heavily during adolescence, borrowed further to pay interest on and to refund old debts, and finally "grew up" to its foreign obligations.

## Growth of the Foreign Debt of the United States

When Alexander Hamilton became Secretary of the Treasury in 1789, he was faced with a foreign debt problem. Under the Confederation, the payment of interest to European creditors had fallen into arrears and several instalments on the principal were overdue. The total delinquency amounted to nearly $12,000,000, to pay which Congress authorized a bond issue. Next, the claims of domestic creditors were honored when Congress passed the Funding Act of 1790. This display of financial integrity made government bonds attractive as investment and European investors purchased large amounts. By 1803 over 49 per cent of the public debt of the United States was owned abroad—$14,-

313,000 in Great Britain, $13,091,000 in Holland, and $2,138,000 in other foreign countries.[1]

A large part of the stock of the first United States Bank was bought by foreign investors during its existence (1791–1811), but when this bank was dissolved in 1811, all of the stockholders were paid off. The amount remitted abroad for this purpose was about $7,000,000.[2]

According to Seybert, slightly over $25,000,000 of the national debt was owned abroad on January 1, 1818—$12,300,000 in Great Britain, $11,100,000 in Holland, and $2,000,000 in other foreign countries.[3]

When the second Bank of the United States was organized in 1816, European investors again placed funds in the central banking institution of the United States, but according to Professor Callender, the securities of no other American corporations were well known in Europe before 1830.[4]

The amount of American securities held in Europe in 1824 was probably about $55,000,000. One writer estimates that $43,000,000 was then owned in England.[5] This latter estimate, by an English authority, includes mainly the national debt and the stock of the second United States Bank, and is in line with the findings of Mr. C. K. Hobson, who states that England bought about $45,000,000 of American securities during 1815–1816.[6]

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[1] *Barron's Weekly*, July 26, 1926, p. 12, article by Max Winkler.

[2] Albert Gallatin, *Considerations on the Currency and Banking System of the United States*, Philadelphia, 1831, p. 44.

[3] Adam Seybert, *Statistical Annals*, p. 749.

[4] G. S. Callender, "The Early Transportation and Banking Enterprises of the States in Relation to the Growth of Corporations," *Quarterly Journal of Economics*, vol. 17, pp. 152–53.

[5] *Ibid.*, p. 141.

During the years 1815–1830 the American Government paid over $100,000,000, collected in taxes, to the holders of its bonds. Since over $25,000,000 of these bonds were owned in Europe, this meant a rapid return of capital to Europe unless foreign investors reinvested in other American securities. The cancellation of the government debt, however, was very gradual until 1828, and it is possible much of the capital remitted by the Government to foreign holders of the national debt up to that time was reinvested in American stocks, so that the total foreign debt may have decreased very little.

After 1828, however, the retirement of the national debt was rapid. By 1835 it was completely wiped out. During the next five years it was only natural that English investors should look upon American state, banking and transportation stocks with favor. In the first place, they were greatly impressed by the fact that the Government had paid off its debt. Seldom do states become so affluent as to make it necessary to pay off the national debt as an outlet for disposing of surplus treasury funds. In the second place, Englishmen who had invested in the first United States Bank had had their capital returned to them in 1811, and those who invested in the second

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[6] C. K. Hobson, *The Export of Capital,* London, 1914, p. 105.

United States Bank received large dividends regularly.

There was still another reason why British business men were interested in lending capital to the United States. A growing source of British income was the export trade in cotton goods to India. The market was a large one and it was desirable to expand cotton production in America. In order to increase cotton production, capital was required to build railways and provide equipment for the planters.

During the years 1833–1839, as a result of these influences, British capital, rising to full tide, poured into the United States. In 1836 Daniel Webster thought the foreign debt might amount to $50,000,000, but a financial writer believes $150,000,000 a reasonable estimate for 1837.[7] In 1838 Mr. Garland submitted to the House of Representatives a list of American stocks owned abroad having an estimated value of $110,000,000, of which about $70,000,000 were the securities of states, principally Louisiana, Pennsylvania, and New York.[8] In that year, after his estimate was made, large amounts of the securities of Mississippi and other states were sold abroad, and in 1840 President Van Buren in his message expressed the opinion that the total amount of foreign-held securities was $200,000,000 and the annual interest remitted abroad not less than $12,000,000.

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[7] London *Bankers' Magazine,* vol. 15, p. 292.

[8] The following estimate of the amount of American stocks held in England, is given in Mr. Garland's speech in Congress against the sub-treasury bill.

This estimate was substantially verified by a committee of the House of Representatives a few years later, which estimated the amount of state securities alone at nearly $150,000,000.[9] If to this amount we add $50,000,000 for corporation securities we may conclude that the total American stocks and bonds purchased by foreign investors between 1815 and 1840 equaled nearly $200,000,000.[10]

Estimate of American Stocks Held Abroad, Principally in England, 1838 *

| | |
|---|---|
| Louisiana bank stock in bonds of the state | $22,000,000 |
| Pennsylvania state stocks | 16,000,000 |
| Pennsylvania United States Bank | 20,000,000 |
| New York State | 4,500,000 |
| New York City | 1,500,000 |
| Alabama State | 4,500,000 |
| Mississippi State | 2,000,000 |
| Ohio State | 3,500,000 |
| Maryland State | 3,000,000 |
| Virginia State | 2,000,000 |
| Illinois State | 2,000,000 |
| Indiana State | 4,000,000 |
| Florida Territory | 1,500,000 |
| Farmers' Loan and Trust Co., 5% bonds | 3,000,000 |
| New York Life Insurance and Trust Co., 5% bonds | 1,500,000 |
| American Insurance Co., 5% bonds | 1,000,000 |
| Mississippi bank stock | 1,000,000 |
| Tennessee bank stock | 800,000 |
| Delaware and Raritan Co. and Camden and Amboy R.R. bonds | 2,000,000 |
| Miscellaneous stock and securities | 14,200,000 |
| Total | $110,000,000 |

*(*Niles' Register,* vol. 54, p. 322.)

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[9] *House Report No. 296,* 27th Congress, 3rd Session.

[10] G. S. Callender, *Quarterly Journal of Economics,* vol. 17, pp. 144–46.

## Repudiation of State Debts, 1842

After 1839 the flow of English capital to the United States was brought to a halt by the collapse of banking in America in that year. The second Bank of the United States suspended payment in October, 1839, and after an unsuccessful attempt to resume payment in 1841 was forced to liquidate. Of its total capitalization of $35,000,000, foreign investors owned $27,000,000, and since the stock had generally sold at around $120 a share, the actual purchase cost of the stock owned in Europe was probably about $32,000,000. When the shares of the Bank declined in 1841 to $3 a share, the market value of the stock owned abroad fell from around $32,000,000 to less than $1,000,000.

During the following year seven states either defaulted the interest on their debts or openly declared for repudiation of the principal. Repudiation was discussed in Pennsylvania, Maryland, Michigan, Louisiana and Mississippi. Indiana and Illinois did not openly repudiate, but being undeveloped commercially could not meet their obligations.[11] Pennsylvania first defaulted on interest on her debt during 1843–1844, though some attempt was made to meet her obligations.[12]

The default by the State of Michigan was due to conditions arising from bank failures. Michigan had sold several million dollars of bonds to the Morris Canal and Bank Company, it being agreed that part payment to the state would be made by the Bank of the United States. But both of these banks failed before the state received the entire amount, and it was then found that they had pledged the bonds in Europe for the full face value. The State of Michigan declared it would pay only the amount it had received from the Morris Canal and Bank Company, and let the holders in Europe look for the balance to the banks which had failed, notwithstanding the fact that the bonds were transferable.[13]

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[11] London *Bankers' Magazine*, vol. 1, p. 362.

[12] *Ibid.*, p. 358.

The repudiation of its bonds in 1842 by the State of Mississippi was a direct consequence of a severe decline in the price of cotton.[14]

The immediate effect of the spread of sentiment in favor of repudiation caused a decline in the prices of state securities. Most of the bonds of the southern states had sold around 95 to 100 in London in 1838, but in 1842 the bonds of Arkansas dropped to 40; those of Alabama, to 50; the securities of Mississippi and Florida were seldom quoted at any price; the bonds of Kentucky and Ohio fell to around 75, while the securities of Illinois and Indiana declined to 20 in the New York market.

The total collapse of the second United States Bank and the depreciation of the securities of the states had an immediate effect upon the economic development of the United States. It was impossible for either the states or the banks to obtain new capital. Credit was prostrate. From the standpoint of material wealth, however, the country was richer than ever before. The resources of the country had been rapidly developed with English capital, and merchandise had been bought and imported on English credit, and during 1842–1843 the country partially avoided paying its foreign obligations by means of the bankruptcies of individuals and states, while retaining and enjoying the material wealth it possessed.[15]

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[13] *Ibid.*, pp. 360–61.

[14] Sumner, *Banking*, p. 380.

From 1839 to 1848, goods secured from foreign countries were paid for by cash or by exports of American produce. The foreign debt showed little increase. In fact, with $27,000,000 of United States Bank stock, $5,000,000 of Mississippi bonds and substantial amounts of other stocks rendered worthless, the interest-bearing foreign debt probably decreased fully $40,000,000 between 1840 and 1844.

## Increase of Foreign Debt, 1848–1860

In 1848, however, a number of events conspired to make America again attractive to foreign investors.

The Mexican War came to an end early in 1848. In March, the United States Government issued $18,000,000 of "victory" bonds. At that time business in England was dull following the panic of 1847, and English investors took about one-fifth of the American bond issue. Toward the end of the year there was a political outbreak in Berlin, and in Austria conditions were so unsettled that the Emperor abdicated. The shares of British railways had proved uncertain investments since the panic of 1847, and with conditions on the Continent unsettled, the United States 6 per cent bonds in London rose rapidly above par. There was buying by inhabitants of France, Germany and Holland.[16] In April, 1849, every steamer carried American stocks and the bonds of Ohio, Pennsylvania and New York to supply the foreign demand.[17]

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[15] New York *Bankers' Magazine*, vol. 2, p. 204.

By this time all of the states which had defaulted during the depression of 1841–1843 had made definite arrangements for the redemption of their credit, with the exception of Mississippi, and it was generally agreed that dishonesty in America was the exception rather than the rule, repudiation having been entirely a reflection of passing economic distress.[18]

In the monthly financial reviews of the New York *Bankers' Magazine* during 1850 and 1851, the discussion of general business conditions centers most importantly around the subject of the sale of American securities abroad and the seeming intention of the importers at New York and Boston to flood the United States with European goods of the most costly kind.[19] By July 1, 1852, it was established that the total amount of American stocks owned in Europe was fully $261,000,000, an increase of $120,000,000 in four years.[20]

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[16] New York *Bankers' Magazine,* vol. 3, pp. 633–634.

[17] *Ibid.,* vol. 2, pp. 707–708.

[18] *Ibid.,* vol. 2, pp. 454–455.

[19] *Ibid.,* vol. 5, pp. 84, 262, 347; vol. 6, pp. 671, 672, 924.

The following is an estimate of the amount of American stocks owned in Europe or advanced on by foreign houses, and issued for the various purposes of state, city, banking and railway companies, as compared with the amount of state stocks held on the first of July, 1848:

American Securities Held Abroad

| | State<br>July 1, 1848 | Public, Banking, Railway, etc.<br>July 1, 1852 |
|---|---|---|
| U. S. Federal | $11,000,000 | $45,000,000 |
| New York | 16,000,000 | 40,000,000 |
| Pennsylvania | 30,000,000 | 47,000,000 |
| Ohio | 15,000,000 | 30,000,000 |
| Michigan | 2,000,000 | 6,000,000 |
| Massachusetts | 2,000,000 | 7,000,000 |
| Maryland | 6,000,000 | 10,000,000 |
| Virginia | 6,000,000 | 12,000,000 |
| South Carolina | 2,000,000 | 2,500,000 |
| Georgia | 700,000 | 1,200,000 |
| Alabama | 7,000,000 | 8,000,000 |
| Mississippi | 7,000,000 | 7,000,000 |
| Texas | 2,000,000 | 2,000,000 |
| Arkansas | 2,500,000 | 2,500,000 |
| Tennessee | 2,500,000 | 4,000,000 |
| Kentucky | 2,000,000 | 3,000,000 |
| Indiana | 5,000,000 | 10,000,000 |
| Illinois | 10,000,000 | 13,000,000 |
| Louisiana | 12,000,000 | 10,000,000 |
| Other | 500,000 | 1,000,000 |
| Total | $141,200,000 | $261,200,000 |

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[20] New York *Bankers' Magazine*, vol. 7, p. 252.

The above estimate for 1852 is higher than other estimates made later for 1853 and 1854. The Secretary of the Treasury reported European holdings on June 30, 1853, at about $200,000,000.[21] His list, however, was probably not as complete as the above *Bankers' Magazine* compilation, which included stocks pledged with foreign bankers. The Treasury tabulation covers the following:

| American Stocks | Total Issued | Held Abroad June 30, 1853 |
|---|---|---|
| Federal | $ 58,000,000 | $ 27,000,000 |
| State | 191,000,000 | 73,000,000 |
| Municipal | 80,000,000 | 17,000,000 |
| Railway bonds | 170,000,000 | 44,000,000 |
| Railway stocks | 310,000,000 | 8,000,000 |
| Bank | 267,000,000 | 7,000,000 |
| Other | 103,000,000 | 8,000,000 |
| Total | $1,179,000,000 | $184,000,000 |

Still another estimate gives a total of only $230,000,000 for the year 1854.[22]

The high tide of foreign investment in American securities came after July 1, 1852. The excess of imports over exports during the two years from July, 1852, to June, 1854, was greater than during any two years since 1836–1837; shipments of American securities into the London market were greater in 1853 than at any time since 1836.[23] In 1854, owing to the outbreak of the Crimean War, the influx of European capital was temporarily curtailed. The Crimean War did not entirely keep out foreign capital, however. It did not involve the whole of Europe; there was no great financial exhaustion, and before the end of 1855 there were fairly liberal orders for American securities both in England and the Continent, covering state, city, county and railroad bonds.[24] A 10 per cent mortgage on a railroad in Texas was taken in July, 1856, by capitalists in Germany and other portions of the Continent.[25]

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[21] *Senate Document No. 42,* March 2, 1854; cf. *American Almanac,* 1855, p. 216.

[22] London *Bankers' Magazine,* vol. 15, p. 292.

[23] New York *Bankers' Magazine,* vol. 8, p. 89.

From the foregoing discussion it would seem that the foreign debt (stocks) during 1815–1860 increased within the approximate limits in the following table.

Estimates of American Securities Held in Europe

(Millions)

| July | High | Low | Mean | Change |
|---|---|---|---|---|
| 1815 | $40.0 | $30.0 | $35.0 | ...... |
| 1820 | 50.0 | 40.0 | 45.0 | $+ 10.0 |
| 1830 | 60.0 | 45.0 | 52.5 | + 7.5 |
| 1837 | 150.0 | 125.0 | 137.5 | + 85.0 |
| 1839 | 200.0 | 170.0 | 185.0 | + 47.5 |
| 1845 | 160.0 | 135.0 | 147.5 | — 37.5 |
| 1849 | 190.0 | 160.0 | 175.0 | + 27.5 |
| 1852 | 300.0 | 250.0 | 275.0 | +100.0 |
| 1854 | 350.0 | 275.0 | 312.5 | + 37.5 |
| 1860 | 400.0 | 300.0 | 350.0 | + 37.5 |

The estimates of foreign commercial debt by contemporary authorities in such years as 1836 and 1837 were equal to about 40 per cent of the annual imports. Estimating the foreign commercial debt on this basis and adding the result to our above estimates of foreign holdings of American shares and bonds we arrive at the following table of total foreign debt.

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[24] *Ibid.*, vol. 9, p. 743.

[25] *Ibid.*, vol. 10, p. 503.

American Debt Abroad (Millions)

| Year | Shares and Bonds | Commercial Credit | Total Debt | Change |
|---|---|---|---|---|
| 1814 ......... | $ 35.0 | ...... | $ 35.0 | ........ |
| 1815 ......... | 35.0 | $100.0 | 135.0 | $+100.0 |
| 1820 ......... | 45.0 | 70.0 | 115.0 | — 20.0 |
| 1830 ......... | 52.5 | 30.0 | 82.5 | — 32.5 |
| 1836 ......... | 125.0 | 80.0 | 205.0 | +122.5 |
| 1837 ......... | 137.5 | 35.0 | 172.5 | — 32.5 |
| 1839 ......... | 185.0 | 80.0 | 265.0 | + 92.5 |
| 1845 ......... | 147.5 | 50.0 | 197.5 | — 67.5 |
| 1849 ......... | 175.0 | 65.0 | 240.0 | + 42.5 |
| 1854 ......... | 312.5 | 140.0 | 452.5 | +212.5 |
| 1860 ......... | 350.0 | 160.0 | 510.0 | + 57.5 |

Thus between the adoption of the Constitution in 1789 and the outbreak of the Civil War, a total of about $350,000,000 of American stocks and bonds was sold abroad. Of these nearly $100,000,000 were returned during the first two years of the Civil War when British investors observed that the Treasury at Washington was following unsound financial policies and that the armies of the South were increasingly successful. When the Battle of Gettysburg in July, 1863, marked the turn of the war, the total foreign debt probably did not exceed $250,000,000, of which $150,000,000 was state bonds and $100,000,000 railway securities.

As soon as the end of the Civil War was in sight, however, Germany and Great Britain bought large amounts of the national debt and followed this with heavy buying of American railway bonds. Within ten years the American debt to Europe quadrupled. The tendency of the greenback dollar to improve in value provided a speculative inducement.

In 1866 the Secretary of the Treasury estimated that $350,000,000 of United States government bonds had been shipped to Europe. This, added to the $250,000,000 of state and railway securities already abroad, brought the total debt to $600,000,000.

According to the *Financial Chronicle,* foreign investors in March, 1869, held $700,000,000 of United States government bonds and $300,000,000 of other American securities, a total of $1,000,000,000; the estimate in May, 1871, was $800,000,000 of government bonds and $700,000,000 of railway securities, a grand total of $1,500,000,000. From the panic of 1873 until resumption of the gold standard on January 1, 1879, European buying of American securities was largely curtailed. In fact, over $100,000,000 of government bonds was returned in 1878 and, in addition, substantial amounts were recalled for redemption by the Treasury.

After 1879 America was on a gold standard, and foreign capital had to be invested on an income basis. The foreign buyer during 1879–1881 and 1886–1890 was sufficient, however, to bring the total foreign holdings of American stocks and bonds up to about $2,000,000,000 in 1890.

## America Still a Debtor Nation in 1913

After 1890 the "free silver" agitation in the United States tended to drive foreign capital away from America. Moreover, after the election of McKinley in 1896, there was only a short period until the beginning of the Boer War in 1899, during which British foreign investment was somewhat curtailed. About this time, also, investors in the United States began to place large amounts of capital in Mexico and Canada. Mr. Harvey E. Fisk estimates that the foreign investments of the United States reached $2,000,000,000 in 1909 and $2,605,000,000 in 1913. The following table gives Mr. Fisk's estimate by countries in 1913:[28]

United States Foreign Investments, 1913 (Millions)

| | |
|---|---|
| Canada | $ 750 |
| Cuba | 100 |
| Mexico | 1,050 |
| Central America | 50 |
| South America | 100 |
| Europe | 350 |
| China and Japan | 100 |
| Philippine Islands | 75 |
| Porto Rico | 30 |
| Total | $2,605 |

Notwithstanding this large increase in American investments abroad, the United States was still a debtor, on balance, in 1913. British investors from

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[28] Harvey E. Fisk, *Inter-Ally Debts*, pp. 306–307.

1896 to 1913 had doubled their holdings of American stocks and bonds, according to the estimate of Mr. Edgar Crammond in the following table.

British Foreign Investments (Millions)

| Dominions, Colonies and Possessions | 1896 | 1913 | Increase |
|---|---|---|---|
| India (including Ceylon) | £ 294 | £ 447 | £153 |
| Australia and New Zealand | 323 | 408 | 85 |
| Africa | 333 | 401 | 68 |
| Canada | 140 | 423 | 283 |
| Other British possessions | 33 | 91 | 58 |
| Total, British Empire | £1,123 | £1,770 | £647 |
| Foreign Countries | | | |
| United States | £ 315 | £ 632 | £ 317 |
| Argentina | 117 | 329 | 212 |
| Brazil | 45 | 135 | 90 |
| Mexico | 27 | 81 | 54 |
| Japan | 13 | 74 | 61 |
| Chile | 29 | 57 | 28 |
| Egypt | 51 | 75 | 24 |
| Uruguay | 23 | 40 | 17 |
| China | 26 | 38 | 12 |
| Peru | 21 | 32 | 11 |
| Cuba | 5 | 29 | 24 |
| European countries | 254 | 170 | 84 * |
| Other foreign countries | 43 | 92 | 49 |
| Total, Foreign | £ 969 | £1,784 | £ 815 |
| Grand Total | £2,092 | £3,554 ** | £1,462 |

* Decrease

** This £3,554,000,000 comprises capital in colonial or foreign loans and does not include capital investment abroad in the purchase of lands, etc., nor capital employed abroad by British banking, mercantile and shipping houses. Estimating these private investments as equivalent to 10 per cent of public investments, a further sum of £350,000,000 must be added to the total, making the aggregate value of all British investments abroad by the end of 1913, four billion pounds.

The foregoing figures were presented by Mr. Crammond during an address on foreign investments before the British Institute of Bankers on June 28, 1921.

According to this estimate Great Britain owned over $3,000,000,000 of American securities in 1913. In addition to this must be added the holdings of Holland and other European countries, and also the large direct investment of British and German capital in land and private business concerns in the United States. The total American debt to Europe in 1913 was probably around $5,000,000,000, or nearly $2,500,000,000 in excess of the American foreign investments.

### America a Creditor Nation

Steady investment in Mexico, Cuba, Porto Rico, the Philippines and Canada would probably have made the United States a creditor nation within a decade after 1913, even if there had been no war. The World War, however, brought to pass very quickly what would have been a much slower development. To pay for war supplies, Great Britain sent back half of her holdings of American railroad securities between July, 1914, and July, 1916. Mr. L. F. Loree, President of the Delaware and Hudson Railroad, undertook to make a compilation of the amount of American railroad securities returned during 1915 and 1916, and estimated that on July 31, 1916, Europe still held $1,415,000,000 of railway stocks and bonds, as compared with $3,000,000,000 before the War. This European liquidation continued until April, 1917, when America entered the War, so that the American foreign debt was probably reduced over $2,000,000,000.

Thus, before America entered the War in 1917 the foreign debt had been reduced to an amount not in excess of the foreign investments of the United States. The slate was balanced. Since that time there has been an increase of about $9,000,000,000 in private investments abroad, in addition to the $10,000,000,000 of loans to the Allies. The total private investments in 1926 were nearly $12,000,000,000, while loans to Allies, plus accrued interest, are somewhat over $11,000,000,000, making the total foreign investments of the United States about $23,000,000,000. Against this there is still a foreign debt of nearly $3,000,000,000, leaving, on paper, a net foreign investment of about $20,000,000,000.

## Distribution of Foreign Investments

As a practical matter it is wrong to state that loans to the Allies plus accrued interest are worth $11,000,000,000. These loans have been refunded at low rates of interest. If we take a normal rate of interest and estimate the present worth of Treasury loans to Europe on a strictly commercial basis, they would be equal to slightly less than $5,000,000,000. The following table gives a fair summary of the present worth of America's foreign investments, as of 1926.

United States Foreign Investments

| | 1926 |
|---|---|
| Loans to allies, estimated value | $ 5,000,000,000 |
| Foreign industrial investments | 6,468,000,000 |
| Private investments in foreign gov't securities | 5,363,000,000 |
| Total foreign investments (comm'l value) | $16,831,000,000 |
| Foreign debts | 3,000,000,000 |
| Net foreign investment | $13,831,000,000 |

The Department of Commerce gives the following estimated geographical distribution of the private investments:

Foreign Investments of U. S. (Loans to Allies Excluded)

| Where Invested | 1924 | 1925 | 1926 |
|---|---|---|---|
| Europe | $1,900,000,000 | $ 2,530,000,000 | $ 3,257,000,000 |
| Canada | 2,460,000,000 | 2,720,000,000 | 2,990,000,000 |
| Latin America | 4,040,000,000 | 4,263,000,000 | 4,688,000,000 |
| Asia and Oceania | 690,000,000 | 853,000,000 | 896,000,000 |
| Totals | $9,090,000,000 | $10,366,000,000 | $11,831,000,000 |

## Foreign Debt and Panics

The existence of a foreign debt is a serious matter in a business crisis. The creditor nation can drain the debtor nation to improve its position and the debtor nation suffers. In actual experience it is found that the maturities of trade acceptances and short-term notes give more trouble than foreign holdings of stocks and bonds. In 1914, for instance, the New York Stock Exchange was closed at the outbreak of the War and it was impossible for Great Britain to sell large quantities of stocks and bonds in New York in the open market. But British bankers held $1,000,000,000 of trade acceptances, payable by other countries, and also some maturing short-term notes of American railroads and municipalities. The financial strain in Wall Street was largely due to the necessity of meeting the short-term notes and trade acceptances. That was also true in the panic of 1837 and in other crises.

In the future the American money market will be well-protected against financial strain arising from payment of foreign debts. America is a creditor nation with respect to stocks and bonds and is in a position to finance foreign trade paper to an extent not possible before the Federal Reserve System was established. And, still more important, under the Federal Reserve System it is possible to release large amounts of gold without causing a crisis.

The benefits of the Federal Reserve System, moreover, will not be confined to America. Owing to the power of the federal reserve banks to stabilize credit in business dealings with foreign countries, it will require only a moderate amount of cooperation on the part of the Bank of England and other foreign central reserve banks to prevent extremes in money market conditions. In case of extreme credit inflation resulting in a crisis, America will perhaps have the power to squeeze some of the foreign countries, just as American business men have suffered distress on account of being squeezed during past money market crises in Europe. But if the central reserve banks of Europe and America can successfully stabilize business conditions in the future so as to prevent the extremes of credit inflation which produce crises, such drains can be avoided. This would constitute the greatest reform in behalf of human welfare which can be suggested, except the elimination of war.

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